Telephony.

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YOUR DUTY.

After you have built an efficient organization, don't keep its details to yourself; you are not the only one involved.—J. William Schulze.

Efficiency in Operating.

For many years the attention of men was directed toward producing machinery and apparatus which would be more efficient than that in use. The steam engine in power plants is rapidly being displaced by the more efficient turbine, while some generators, after only a few years of service, are removed to make way for those of a more economical type. The carbon filament lamp has given way to the tungsten filament lamp and it in turn is yielding to the nitrogen gas filled lamp.

While these changes in machines and apparatus were going on, investigations were being made toward making man more efficient. The results attained by Emerson, Taylor and others in this field are well known. The doctrine of scientific management has spread. The methods of paying employes engaged in manufacturing were studied; the day work plan gave way to piece work rates. This system did not prove very satisfactory to either employer or employe; so another system, known as the bonus plan, was developed. By it both employer and employe benefit from increased production. The more work the employe turns out, the more pay he receives and the less the cost of manufacture of the article. The employe therefore, has an interest in becoming more efficient, in doing the work in the easiest and most direct manner.

Telephone companies have been rather slow to apply the principles of efficiency to the operating force, but progress is being made in that direction as indicated in the article by Mr. Brockwell in last week's issue of Telephony. On another page of this issue, the bonus plan for toll operators which has been adopted by the South Bend Home Telephone Co., of South Bend, Ind., is described by President Daicey. Among the results brought about through the introduction of the plan is a reduction of 50 per cent. in the number of cancelled tickets—surely a strong argument in favor of the plan.

A Campaign Against Lateness.

"That's an interesting chart you have upon the bulletin board," said the visitor to the chief draftsman. "Tell me how you came to get it up." The chart referred to was one showing the variation in tardiness of the employes of the drafting room. This particular company did not have a time clock system and, as the short days of fall came on, there was a notable increase in the number of men arriving five or ten minutes late in the morning. Something had to be done, so the chief draftsman hit upon the chart scheme of showing the percentages of tardiness from week to week.

A record was taken of each person coming in after 8:30 in the morning. At the end of the week, a list of the employes was posted on the bulletin board, with their record as to tardiness. Right beside the list was a chart showing the exact percentage of tardiness from week to week. If the curve rose one week, the entire force knew the person or persons who caused it, as the posted list with the record of each fastened the responsibility. Any noticeable increase in the percentage of lateness was a cause for comments. It is needless to say that after the inauguration of this plan, the tardiness in that drafting room fell off considerably.

During the spring and summer seasons, the loss to companies through employes being late in arriving at their work is slight. In the fall and winter months, it sometimes amounts to considerable in the aggregate. Department heads of companies, not having time clock systems, find the problem of reducing tardiness a difficult one to cope with at this season of the year. The method pointed out is one way of overcoming the tendency towards lateness without arousing a feeling of ill will on the part of employes.

The Road to Bushville

By HERBERT KAUFMAN

Highball practice never yet developed a pinch hitter. More than one game is lost the night before. It's great to hear 'em sing, "He's a jolly good fellow," but the bleachers don't join in the chorus. The gay white way begins in the big league cities, and ends in Bushville.

Keen plays demand clean ways. A rounder can't give the team a square deal.

From time immemorial, practice before the bar has preceded a seat upon the bench.

The pace of the diamond is too swift for the fast life. Every error of living eventually finds its way to the score card.

Fine dope, eh? Sounds like an interview with Connie Mack. Why not send a copy to every manager in the country, to reprint and stick up in the club house? But suppose you reprint it upon your memory.

All games are alike, and demand the same habits of continence, self-control, and decency. Each man belongs to a team, and the success of his concern and associates is partially controlled by his own efficiency. Any organization is handicapped when one of its units is out of order. You can't set your mind on dissipation and get your hand on opportunity.

"Coppers" and determination won't burn simultaneously. No two objects, especially a headache and an idea, can occupy the same space at the same time.

Pleasures that rob your strength, are thieves that tap the boss' till. He hires a complete being, and when you deliver part of yourself for work, he gets undervalue for his money.

You've been lucky so far, but one of these days you'll muff an "easy one" and spoil a good play for the firm. Then the manager will begin to look over his youngsters, and drop a hint to the man under you to limber up. Meanwhile, he'll quietly plant a question or two where they'll bring the most information, and try to find if it was the sunlight or the white lights that got into your eyes.

The big leagues aren't the only places where nines are watched. Business, too, is alert to the value of inside information on employees. Booze fighters, gamblers, and corner loafers aren't tolerated long in well conducted establishments.

All the big chances are turned over to the careful, orderly, respectable man. His face identifies him. A normal sleep is its own advertisement. Folks who keep themselves in shape are most likely to keep their work in order.

Personal carelessness of any sort is a handicap. Bad teeth are apt to ache in the midst of important deeds. Indigestion is likely to manifest itself at critical junctures, and debt is too distracting at all times to render a spendthrift reliable.

When half of a man's brain is out the window, the rest of it isn't worth hiring.

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Establishment of Telephone Service in Constantinople

City of Million and Quarter People Without Telephone System Until About Four Months Ago—Now Has 30,000 Miles of Line—Europe and Asia Linked—Operators First Mussulman Girls in Commercial Life—Published Through Courtesy of The Telephone News

That Turkey will be drawn into the turbulent European whirlpool now seems probable. We may watch with sympathetic interest the step which the Ottoman Empire will take, for it means that much of what it has gained in its national re-birth hangs in the balance.

Allowing our thoughts to run backward a few years, we may recall that on April 27, 1909, there ended at one and the same time, the nine months' farce of constitutional government, with a typical oriental despot on the throne, and the reign extending over a third of a century, of the Sultan Abdul Hamid II. A new regime began from that day. Five years ago the Mussulman and the non-Mussulman were rank pessimists as to the future of their country. How could they be anything else? Suddenly, however, aspiration, violently suppressed for half a millennium, sprang into new life.

History, we are made to realize these days, has its ironies

Turkish Girls in Kadikeny Exchange on Arabic Side.

and its revenges. At one time the Mohammedans were the intellectual leaders of Europe. But the Islam that conquered Spain, North Africa and Persia has degenerated, and a few months ago Turkey swallowed some of her national pride and asked for teachers to instruct her youths in those lessons which have kept to Europe and America their preëminence among the continents.

They realized that to content themselves with the reorganization of the army, the police and the gendarmerie would be to condemn themselves once more to failure; so the country has lately turned its attention toward schools, agriculture, means of communication, commerce and industry.

Prior to the advent of the Société Anonyme Ottoman des Téléphones de Constantinople, there was no telephone system in Constantinople, although the population is 1,250,000. In fact, this is the first time that Europe and Asia have been linked together by telephone; consequently this far-off telephone system is of enormous importance as a real progressive step.

The length of the lines in the city network now amounts to about 30,000 miles inclusive of the submarine cable under

Stamboul Office Has Operators of Many Nationalities.

the Bosphorus, the Golden Horn and the Gulf of Ismid. The inhabitants have been quick to consider telephone service a necessity in Constantinople, inasmuch as the city limits are unusually wide. The business section alone is cut in two by the Golden Horn, and it takes over half an hour to send a business communication from Galata to Stamboul. The installation of a telephone system was therefore hailed as the fulfillment of a pressing need by the business world of the Turkish metropolis. It is undoubtedly the forerunner of a commercial awakening.

The system commenced working only four months ago,

Miss F. J. Minter, and First Mussulman Operators.

and already more than 4,000 subscribers have been connected, while the company's business office has filed contracts for over 4,500 stations. Three large exchanges have been opened—one at Pera, one at Stamboul, and one at Kadikeny—and 11 smaller exchanges dotted about Con-

stantinople are now being set up. Present equipment at Pera is for 2,400 lines, but an 800-line extension has been ordered and the question of further general development is now being considered. This privately owned company has

The Apparatus Room at Pera.

proved tremendously popular in the very center of the Mohammedan world.

During the recent troublous times in Turkey, the telephone company had great difficulty in carrying on installation work, as its workmen were constantly being drafted for army service. A long distance telephone line from the Turkish ministry at Constantinople was also constructed in spite of these unfavorable circumstances.

Moreover, interesting as the work of developing a telephone system in Constantinople may have been, Douglass Watson, the general manager, and his loyal band of workers have also found it an extremely arduous task, for they are confronted with many formidable difficulties not met with in other parts of the world. For example, there is the difficulty of languages. At present an official service is given in Turkish and French, but Greek also is very widely spoken over the wires and, to a lesser degree, German, English, Italian, Russian and Spanish. There is someone in each exchange who can answer, if so required, in any of these languages.

To add to the difficulties of these telephone pioneers in Turkey, every member of their staff has had to be tediously trained, from the exchange managers and chief supervisors downwards, for but four or five of the entire number of employes had ever seen a telephone until a few months ago. The burden of dealing with this untrained staff, few of whom speak English, has fallen mainly upon the shoulders of a small group of British.

The operating staff is truly cosmopolitan and consists of Mussulmans, Greeks, Armenians, Hebrews, Bulgarians, Maltese, Syrians and Russians. The Mussulman operators are the first to enter, not only the telephone service, but any commercial career, and the experiment is being watched with pleasure and interest by all the more advanced Turks.

The emancipation of women is now making rapid progress in European Turkey. What seemed to be impossible of achievement five years ago is now an accomplished fact; the Turkish woman is today not only a student in foreign lands but is also finding employment in the midst of the Mohammedans.

This significant opening of a new field of endeavor for Turkish women will be hailed with rejoicing, not only in the Ottoman Empire, but throughout every portion of the civilized world. These seven Mussulman girls by putting on their head receivers and marching to positions at the switchboard, have started what is perhaps the most important forward step in the world-wide "equal rights" movement that has occurred during recent years in any part of the globe.

It is reported, however, that the Mussulman operators are veiled while performing their duties; and in some cases wear that all-enveloping cloak of tradition, the *tscharthaff*. Whether or not this will interfere with their work remains to be seen. Be that as it may, the veils will probably fall before the Turkish girls surrender their places, now that they have tasted the joys of independence.

Accountant's Office of the Société Anonyme Ottoman des Téléphones de Constantinople.

Inconsistencies in American Telephone Practice

A Discussion of Methods of and Practices in the Plant, Operating and Executive Departments of Telephone Companies Which are not Economical When Viewed from a Combined Engineering and Commercial Standpoint—The Toll Line Plant—Fifth Installment

By Constructive Critic

There is nothing in all electrical achievement that will inspire more profound wonderment than the appreciation of "holding two separate conversations over the same circuit simultaneously." While the general use of phantom circuits only came in recent years, the original conception and introduction was in the early 80's. We find the principles of the present day phantom circuit disclosed in patents granted to Messrs. A. M. and T. R. Rosborough in 1885, and to J. J. Carty in 1886. However, the principles involved were foreshadowed by patents issued to J. M. Stearns in 1881, British patents to Frank Jacob in 1882, and devices of C. F. Varley of England in 1870.

Phantom Circuits.

The ease with which the principles may be applied, has led to the derivation of phantom circuits in many cases where the physical conditions were not favorable. This means that we have many instances where, in an attempt to make three circuits out of two, we have made three poor circuits out of two good ones. The question may be most seriously raised, unless the conditions are ideal for phantom derivation, if it will not accrue to the advantage of the company to endeavor to improve the operating methods over existing lines, rather than impair them with the apparatus incident to accomplishing the phantom. Few phantom circuits I have listened upon are as quiet as the physical or side circuits. Cross talk is nearly always introduced into the interlinked circuits though, due to inefficient translating equipment and devices of the switchboard, the noise and cross talk are often suppressed by attenuation rather than by neutralization gained by perfect electrical balance at all points.

For perfect operation of phantom circuits, the resistance, cross section, inductance, electrostatic capacity, leakage or insulation of each of the interlinked conductors must be equal. Also the electrostatic and electromagnetic inductive relation of each wire of the side circuits to all other wires in proximity and to earth, must be equal. This condition is promoted by transposing. The windings of the repeating coils used in deriving the phantom should be perfectly balanced in all of the properties, just mentioned, as well.

In practice these conditions are not actually realized, nor is it necessary that they shall be absolutely realized. The successful operation will depend upon the degree of approximation to that condition and to the electrical efficiency of the line and incident equipment circuits. Obviously, if transmssion is attenuated, cross talk and extraneous noise will be attenuated also. This latter often leads us to assume that the success of a phantom combination is greater than it actually is.

There is still a human factor to be reckoned with in the derivation of phantom circuits—the desire and expectation of effecting a new talking circuit may carry one away to the extent of imagining the success greater than it is. I may mention a case: An aerial lead, having five pairs of No. 12 N.B.S.G., 172-lb. copper, extended between two towns, 55 miles apart. It was desired to form one phantom, so tests were made and the phantom was found very noisy and subject to cross talk. A man was sent out to transpose the two circuits to constitute the phantom combination.

When he finished the task, the phantom was again set up. This time it was pronounced "fine," although in reality, to an impartial observer, it was no better than before. After about three months it was found that the lineman had transposed the circuits on the opposite end of the arm, so the "fine" phantom was found to be made up of the original untransposed circuits—not changed. As a matter of fact, operators refrained from putting any calls over the phantom because of noise and serious cross talk to the side circuits. Notwithstanding this, the general manager was greatly elated over getting an additional circuit between the two towns "for nothing," and he considered the scheme a triumph.

A few years ago an engineer, upon reading the advertisement of a manufacturer who specialized in the manufacture of phantom repeating coils, wrote for prices. With the quotations, came a number of copies of testimonial letters from various telephone men—one was from a very well known general manager. These letters were all keyed high with enthusiasm. The one written by the latter gentleman amplified upon the high electrical efficiency of the coils—they did not affect the transmission of the physical circuits and accomplished a most quiet phantom.

Now, these particular coils have a standard cable equivalent of about 4.5 miles each, or 9 miles for the opposite sets on each physical circuit, thus approximating the equivalent of 110 miles of No. 12 N.B.S.G. (172 lbs.) copper aerial line. The total ohmic resistance of the primary and secondary windings of each coil is 250 ohms, a serious obstruction, not counting other losses. Another well known coil for this purpose, made by a different manufacturer, has a much lower ohmic resistance, but its transmission equivalent is slightly over two miles. There are still better coils to be had.

Of all the inconsistencies practiced in the derivation of phantom circuits, the usual practice of transposing and balancing of line circuits is the most ludicrous.

Transposing and Balancing Line Circuits.

We find engineers and telephone plant operators who will have transposition points most carefully placed along the aerial route—some going so far as having special transposition poles set in mid-spans to keep the transposition distances accurate. They may not take into account the fact that the wires of the pairs to constitute the phantom, are not transposed the same number of times, and thus, due to the average distance between the wires of the pairs differing, the mutual and "regular" capacity of the side circuits to constitute the phantom will be different, all other things being equal. However, if a construction foreman happens to allow a circuit to be transposed in the "wrong direction," there is liable to be heard the clanging of "tinware" forthwith. These same men will doubtless look carefully to insulation and line resistance and other affecting properties of the aerial lines—and then stop. Fuses or heat coil resistances that may affect balance, may be ignored.

The idea that the cable at terminals or enroute may introduce any complications appears "not to be dreamed of in their philosophy"—very often. The wires being relatively in very close proximity in cables, there is every

chance—or even probability—for greater disparity of properties in cabled wires than in aerial wires. There may be over 100 feet difference in length between the wires in the center of the core and those spiralling the outside layer of the core, in a mile of cable. All things being equal, the longer wires will have the greater resistance, leakage, electrostatic capacity, and a corresponding relation of other properties.

Few cables found in practice are spliced to correspond layer to layer, and pair to pair, throughout their length, and a diagram kept so that the relative positions of all wires are known and can be chosen at will. A wire may thread its way through every layer by being "haphazard-spliced" at section junctions. Thus it is extremely improbable that adjacent pairs at terminals will have adjacent positions throughout the cable and therefore improbable that they will have equal properties, or be subject to equal effect from disturbing influences. Nothing promotes noise or cross talk in phantoms combinations, more readily than unbalanced, electrostatic capacity. Since the aggregate electrostatic capacity of cable wires is relatively great, cables are the most fruitful source of such disturbances, particularly as it is difficult, or quite impossible, to insulate cable wires so that all will have absolutely predetermined electrostatic capacities. All wires of a phantom combination may have equal capacity with respect to earth; and the pairs may have similar mutual capacities, though due to threading different positions in the cable core, they may present totally different electrostatic capacity and susceptibility to disturbance with respect to a disturbing wire.

Though a patent was applied for some 15 years ago and granted shortly thereafter, having as its object the correcting of these conditions in cables by "duplexing" or twisting two pairs upon themselves and which are to be correspondingly spliced throughout to comprise the phantom sets, it appears that even the "illustrious 550" only began reducing to manufacture and applying the principles practically within recent years—in certain cases only.

A make-shift method, that has been employed to some extent 'round headquarters in the Bell system, is to "hunt" for pairs having similar electrostatic capacities in the common irregular spliced cables. However, the chances of obtaining reasonably balanced sets of pairs by this procedure is very much greater than with the usual "by guess and by God" method of choosing individual pairs. In any event it is entirely practicable to balance pairs electrostatically with respect to earth and mutually, with a degree of accuracy, by the use of condensers at section splices. This latter method is now a Bell practice—'round headquarters. (Is any one else doing it even 'round headquarters?) The artificial balancing may be applied to duplex cables or it may be applied to cables laid up in the ordinary manner where two pairs for forming the phantom sides, having equal electrostatic capacity, cannot be found. Obviously, this does not correct electrostatic unbalance with respect to a disturbing influence.

Where a cable is not made up in companion sets duplexed expressly for phantom service, as a makeshift the sections of the cable may be spliced to correspond consecutively, layer to layer, and by then selecting pairs, preferably adjacent, in the same layer of the core, it will usually not be difficult to find two pairs suitable for a phantom set that will have approximately identical properties. Due to keeping the same relative relation throughout, pairs comprising the side circuits of the phantom will keep very uniformly related to disturbing wires and other wires within the cable and without the cable, though the latter influence may be almost neglected practically. In practice it will be found that but one phantom set of two pairs can be selected in each layer of the core that will be practically free from the influence of other pairs. If the core be large, and the cross section of the individual wires small, two to three phantom sets may be chosen at approximately equidistant points on the circumference of the core layers, permitting the minimum of interference.

The extreme sensitiveness of toll lines to unbalanced capacity may be appreciated by listening upon such a line after legging one wire of a pair in an ordinary dry core cable, to one side of the line. The length of such legged conductor need not be to exceed 100 to 200 feet in length, in order to convince the most skeptical. However, the cable should be a normal cable—having working pairs in it, or have a grounded sheath, in order that the cable conductor may present capacity.

An instance came to my notice where the engineer was a perfect crank in getting his cable conductors balanced at terminal points, and then neglected to carry out the same plan where the circuits were carried through lengths of submarine, test office, and tap or multipled cable, enroute. What is the use in straining every point to procure perfect balance if we allow unbalanced taps and legs (cable or open wire) to be taken off the side circuits—or that may affect but one of the side circuits?

In a very great majority of cases—I may almost say universally—no attention, whatsoever, is given to transpositions in bridle wires or cables. All trouble, manifesting itself as noise or cross talk, is attributed to the aerial line, while as a matter of fact the latter may be a very minor contributing influence in the instance.

The net result, or the net gain, in employing phantom circuits is not always as great as commonly supposed. We must consider the following if we are to be consistent:

Factors to be Considered in Employing Phantoms.

First: The transmission over the side circuits, or as otherwise known, the physical circuits, is noticeably weakened (the shorter the line, the greater will be this percentage of impairment), thus detracting from the possible capabilities of expensive copper lines, perhaps. It means an indirect loss. To offset this, there is usually the gain of a superior circuit, in point of transmission, in the phantom derived—if it is not counteracted by noise or cross talk, for it must be borne in mind that a very slight extraneous noise in a circuit will detract markedly from the effectiveness of even strong transmission. Weak transmission, if unaccompanied by extraneous noise, is far more commercial than its converse.

Second: The expense of looking after phantomed lines by wire chiefs and repairmen in connection with maintenance, is greater. The insulation must be kept to a higher point than would be otherwise necessary to maintain the most commercial service.

Third: Weak transmission, noisy circuits or cross talk, tend to discourage traffic more than is generally appreciated. If a patron finds it an effort to hold a conversation between two points, or is not sure of replies, due to extraneous noise upon the lines obliterating speech even to a slight degree, he will naturally use the mails or telegraph, or let it go altogether next time. This is particularly true of inexperienced users. If the transmission is loud and clear—free from "that buzzing", not to say ringing generator interference—he will find using the service as satisfactory as a personal interview, and will cultivate the habit of using the telephone upon the merest pretext. It's a cold, serious proposition with the business man. He absolutely refuses to strain himself to hear doubtfully, and to shout to be heard doubtfully, if it can be gotten around by using the mails or the telegraph. From the company's

direct standpoint, time consumed is often cut when a talk is unsatisfactory, thus meaning waste of circuit time.

Fourth: The extra expense of stringing and transposing lines to be used in phantom combinations, together with the cost of the required equipment, may go substantially toward the cost of a new individual circuit, provided the lead will carry it.

Fifth: The use of phantomed lines implies the use of two repeating coils, with attendant transmission losses—one at each terminal of the side circuits, the choke coil method not being a common practice. This, in effect, means that four repeating coils will be in a circuit between common battery subscriber stations at opposite terminals when the switch is routed over a side circuit. If two or more side circuits are in the made-up circuit, two additional repeating coils will be included for each section of line so used. While it is in accordance with common practice to route long haul traffic over phantoms where possible, it is not always found convenient for operators to carry out this procedure without unduly retarding calls, even though her memory may not fail her. As a consequence much long haul traffic is actually routed over circuits comprising one or more side circuits. If the operator at an intermediate through-switching office fails to use technical judgment, she may needlessly add an additional repeating coil, included between her switching cords. As it appears to the writer, just because the repeating coil is well nigh indispensable, in its varied adaptations, to telephone practice, there is no need of overworking the good thing, as we very often do in our persistence in employing phantom circuits. The repeating coil is an evil, even if a necessity.

We should carefully weigh all of the facts enumerated, against one another before deciding to employ phantoms or to continue using them.

I do not wish to be understood as flatly against the application of phantom circuits. I am only against their misapplication. *(To be Continued)*

Organization of The Texas Telephone Co.

The Texas Telephone Co., of Waco, Texas., capitalized at $2,000,000, has filed articles of incorporation in the office of the secretary of state at Austin, Texas. The company is an Independent concern which has consolidated five smaller systems operating in Central, South and East Texas. The lines of the new system traverse 34 counties of the state and constitute a notable Independent network of lines.

The following companies, whose properties were valued at $1,100,000, were included in the consolidation: Falls County Telephone Co., of Marlin, valued at $60,000; Orange Home Telephone Co., Orange, $15,000; Texas Central Telephone Co., Nacogdoches, $25,000; Brazos Valley Telegraph & Telephone Co., Waco, $500,000; Ross Larrabee, successor to the South Texas Telephone Co., Port Arthur, $500,000. The company paid an incorporation fee of $1,602.

President J. Earle holds $1,000,000 of the stock, while Ben C. Hyde, of Kansas City, vice-president, owns stock to the value of $999,600. Of the capital stock, $1,900,000 is preferred, and $100,000 common. The incorporators of the company were J. B. Earle, E. C. Blomeyer, and L. H. Gardner, all of Waco. The following were named as directors: J. B. Earle, E. C. Blomeyer, H. E. Kepler, all of Waco; Ben C. Hyde, Kansas City; Theodore Gary, Macon, Mo.; H. L. Gary, Kansas City; A. F. Adams, Kansas City.

At a meeting of the directors of the new company the following officers were elected: President, J. B. Earle, Waco, Texas; chairman of the board of directors, Theodore Gary, Macon, Ga.; vice-presidents, Ben C. Hyde and A. F. Adams, Kansas City, Mo.; secretary and assistant to the president, E. C. Blomeyer, Waco, Texas; treasurer, H. L. Gary, Kansas City, Mo.; general superintendent, H. E. Kepler, heretofore connected with the Missouri Valley Gas Co. at St. Louis; auditor, L. S. Gardner; and chief engineer, Will Green, of Kansas City.

The new company has arranged to absorb the properties of the Southwestern Telegraph & Telephone Co., at Waco, the consolidation to become effective January 1, 1916, according to the terms of the transaction entered into between the two concerns. The Texas Telephone Co. has purchased a site for a new general office and exchange building in Waco, which will be erected at a cost of more than $75,000. This will be a five-story, fire-proof building and will be completed by January 1, 1914. It will also make extensive improvements to the merged systems.

Mr. Earle, who heads the Independent company, has built up a system of Independent telephone exchanges and connecting toll lines reaching from Fort Worth and Dallas south to San Antonio and east to the Louisiana state line, embracing properties in the cities of Fort Worth, Waco, Austin, Temple, San Antonio, Houston, Port Arthur, Waxahachie, Ennis, Marlin, Mart, Belton, West and other smaller towns.

Economy Telephone Co. Extends Service.

President H. G. Will and Superintendent H. W. Shultz, of the Economy Telephone Stock Co., of Meyersdale, Pa., recently appeared bfore the Pennsylvania Public Service Commission in regard to absorbing the W. W. Moore telephone system, with headquarters at Lavansville. There are about 100 telephones on the Lavansville exchange, serving the towns of Lavansville, Pa., Bakersville, Pa., Edie, Pa., and surrounding farms. The plant was owned and operated by W. W. Moore as a private enterprise. Patrons of the Moore system desired connection with a more extensive system, so the Economy company was appealed to to take the Moore company over as an adjunct to that excellent system. After some negotiations the terms of a deal were agreed to, subject to the consent of the commission, which has now been secured. Economy patrons can now talk with subscribers in Somerset, Jefferson, and Lincoln townships.

For the convenience of its patrons, the Economy company had installed free telephones in all Baltimore & Ohio Railroad stations on its lines, because the railroad company had refused to install the telephones at its own expense. Last spring the Somerset Telephone Co., of Somerset, Pa., made complaint to the public service commission on account of this free service enjoyed by the B. & O. stations. By order of the commission, the Economy company was obliged to take the telephones out of the railroad stations. The railroad company, however, saw that it was putting its patrons to inconvenience by not having Economy telephone connections, and has now ordered the telephones replaced and is paying for them.

District Meeting of Missouri Association.

A district meeting of the Missouri Telephone Association was held at St. Joseph, Mo., on Friday, October 2. Frank Lathrop, telephone expert of the Missouri Public Service Commission, President Houck McHenry and Secretary W. W. Johnson of the association, together with members of the association in that district, were present. A great deal of valuable information was given by Mr. Lathrop in response to questions asked by the members of the association.

Mr. Boush Did Not Say It.

In reporting the proceedings of the eighth annual convention of the Indianapolis Independent Telephone Association, published in TELEPHONY of September 26, TELEPHONY's correspondent inadvertently credited to J. C. Boush, general manager long distance division, the Ohio State Telephone Co., of Columbus, Ohio, a statement respecting the Bell attitude which was not made by Mr. Boush, but by some other participant in the discussion.

The Rejuvenation of the Craneville Telephone Exchange

A Serial Story Telling How a Rundown Telephone Plant Was Rebuilt, Enlarged and Changed Successively from a Grounded to a Local Battery Metallic System and Later to Common Battery —Problems Encountered by Practical Men—Final Installment

By Paul Hamilton

[AUTHOR'S NOTE: In beginning the Craneville annals, it was intended to cover the operating features quite thoroughly, but it was found that the question was one of too much importance and too far-reaching to be properly discussed with the care it merits. At the suggestions of the Editor of TELEPHONY this question with its many ramifications and complicity of problems, will be covered in a new serial story. In closing the present story the readers of TELEPHONY are thanked for their encouraging comments from time to time.]

"Now that the Doctor is with us again, we will take up the party line circuits. In this work, theory is quite as essential as practice. The knowing why we do certain things is quite helpful in party line work," said Mr. Barrows.

"From a single line, a two-party line is the first step. As I have explained before, we must arrange the bells so that they can be rung separately. For this purpose, we have two sides to the line. From the office, however, the generator current is sent out from the ring side of the jack (Fig. 152). You see that no matter if we do connect a bell on each side, only one of them will be rung. To obviate this, we reverse the jumpers at the multiple side of the intermediate frame. Of

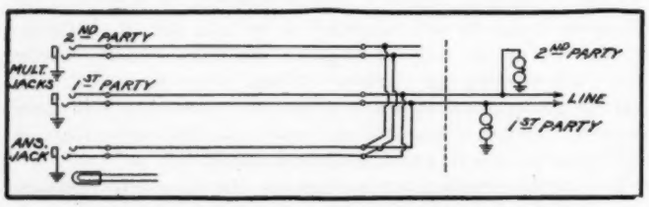


Fig. 152. Circuit for Two-Party Line Ringing.

course, ringing from the answering jack, we will ring the second party only."

"Then you cannot give individual rings on party lines where there is no multiple?" the Doctor inquired.

"Yes, but it is done by using a special reversing key in the operator's position, which is used in ringing one party, like this (Fig. 153).

"Having the multiple, of course, we do not require that key."

"But he is there?" objected Germany.

"Yes, but for another purpose."

"And our two-party lines—is each one to have a multiple jack?" asked Frank. "How about the four-party lines?"

"As they already have, at least many who desire to change from single service have, individual jacks, we cannot change their numbers without considerable inconvenience all around. Hence we will give each subscriber a regular multiple jack. It will be necessary for the operator to know what ring to use; whether the straight generator, the case on one, and two-party lines, or the one, two, three, or four of a four-party line. This is the way we will mark the jacks: For the one ring, a red line under the jack; for two, a red line above; for three, a white line under; and for a four, a white line above.

"There are other methods, chiefly that of adding an extra figure to the number to indicate the ring. However, we may find it quite convenient to change a subscriber from one circuit to another. We can do this without changing his number regardless of whether the bell will ring on the same side of the line. At first our party line stations will be scattered. As fast as we get three or four parties located in the same neighborhood, or possibly the same block they should be placed together on one circuit."

"Another point, before we go into the circuit details: The number plate at the answering jack will be marked with the

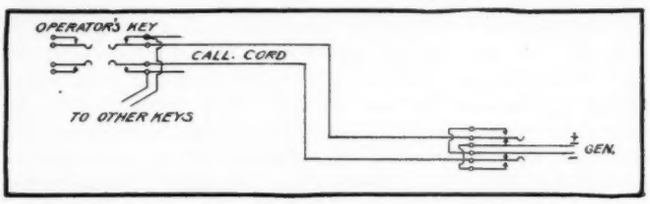


Fig. 153. Reversing Key for Generator.

circuit number only. When there is a call from that circuit, the operator will not know the calling subscriber's number, nor is it necessary that she should here in Craneville. For the number called, she looks at the multiple and determines two things. First, by test if the line is busy, and second, if it is a party line.

"Now if it is a party line and tests busy, she must determine if it is on the same circuit with the party calling. This she can do by referring to a chart above the multiple in her position. The chart (Fig. 154) will show the circuit numbers in order. Extended upon the same line will appear the multiple jack or telephone numbers of the subscribers connected. If she finds the number called is upon the circuit from which the call is made, she must ask the calling party to hang up while she rings.

"For ringing four-party stations we cannot use the alternating current generator. Instead we must use interrupted or pulsating current; that is, we send out direct positive current in impulses by interrupting the flow at the armature of the machine on the two sides of the lines separately. Negative current may be interrupted in the same manner. Thus we have negative and positive current for use on each side of the line, making four distinct ringing systems."

"Do we reverse any jumpers, already?" inquired Germany.

"No. The reversing is done by the operator with the key you spoke of, or rather with two keys. The first idea was

CIRCUIT NO.	TELEPHONE NUMBERS			
PARTIES	1	2	3	4
1	21	127	161	
2	213	17	321	632
3	176	194	371	597

Fig. 154. Four-Party Line Circuit Chart.

to reverse two sets of jumpers, but I prefered to kill the last two pairs of cards and use the key spaces for reverse keys. The keys are wired like this (Fig 155). With everything normal we, of course, use the regular alternating current which loops through both keys.

"It is necessary, of course, for the operator to use two keys when she rings. There is, of course, a chance of sending an impulse of alternating current out on the line before the

reverse key is thrown, but that is something the operator should learn to observe carefully."

"Suppose they do not answer the first ring. Should the operator ask the calling party to repeat the number called?" the Doctor inquired.

"Not on the first request. The multiple jack will designate the ring, but upon a second request, it will be well to verify

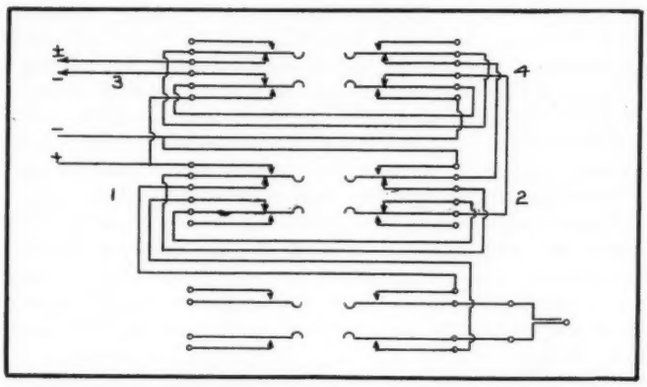


Fig. 155. Four-Party Line Ringing Circuit.

the multiple number. It may be found that a different method of operation may be more suitable under different circumstances, but I think this method will prove satisfactory here in every way.

"Now we will take up what will be of the most interest, perhaps to Frank and Germany; that is, the instrument circuit. We use the same instrument with the equipment except for the addition of a coil in the bell circuit."

"Don't we change the bells in some way?" asked Frank.

"Yes, you use the tension spring and bias screw, which we have not used on direct lines. The bell armature is operated differently.

"We already know that the reversals of the alternating current generator draw the armature first to one magnet and then to the other; that is the positive impulse pulls it one way and the negative pulls it the other, causing it to vibrate. In four-party ringing, we use but one polarity at a time, therefore suppose the positive impulse energizes coil *A*, (Fig. 156) it will pull the armature against that magnet. But as the negative impulse does not follow, the armature will remain against the magnet. To overcome this, we add the tension spring to act instead of the opposing coil. When the magnet releases the armature, the spring pulls it away during the interval when no current is passing. Therefore this spring must be

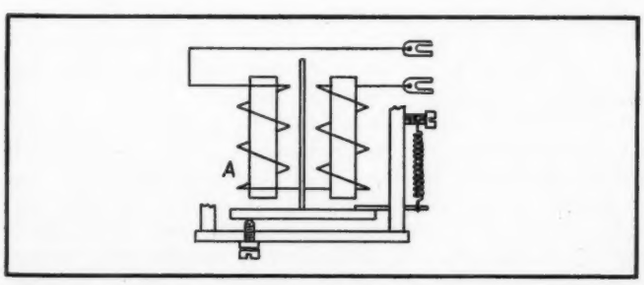


Fig. 156. Direct Current Action on Alternating Current Ringer.

carefully adjusted so it will not have a stronger pull than the magnet."

"What does the little screw down there have to do with it then?" Frank asked.

"It is a very important factor. The power of the magnet, of course, is weaker the farther the armature is removed from the core of the coil If the screw were not there, the spring might pull the armature away so far that the magnet could not attract it, so we set the screw to prevent this and keep the armature within reach, so to speak, of the magnet."

"That is very clear," said the Doctor, "but when we ring with negative current, the other coil is energized. We cannot change the spring and screw—reverse them I mean."

"You are right, but if we reverse the two ends of the coil wires, we shall cause the negative current to act upon the same coil. You will find that the coil wires on our ringers are insulated with different colored braid, one white and one green. The boys will soon learn which wire to connect without having to test."

"You said something about a coil having to be added?" the Doctor questioned.

"Yes. We must add a resistance coil between the bells and ground for this reason. Our bells are 1,000 ohms. By cutting two in multiple from the same side of the line (Fig. 157) we reduce the resistance in front of our line relays to 500 ohms, which will, in many cases, cause permanent signals. Even if this does not result, when the line is in use we have a 500-ohm ground on one side against a 1,000-ohm ground on the other, which will unbalance the line and probably cause noise. When the subscriber hangs up the receiver, or flashes for the operator, the supervisory signals are liable not to be affected, as enough current will be passing to hold up the relays. By inserting a 3,000-ohm coil between the bells and ground, we overcome these difficulties without impairing the ringing of the bells."

"If it is put in front of the bells then what?" asked Frank.

"It would cut down the current before it reaches the bell coils. After the curent passes through the coils, it does not

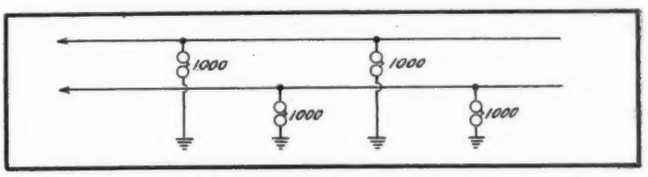


Fig. 157. Four-Party Bells Showing Reduced Resistance.

matter how much or how little of it reaches ground. But we want the full force in the ringer coils."

"Why can't the bells be connected to the condenser the same as on two-party and single lines?" the Doctor asked.

"Because direct current, even though sent out in impulses, will not pass the condenser, or to be more exact, will not charge and discharge the condenser, so we must connect the bells direct to one side of the line."

"Which side, already?" questioned Germany.

"Always on the same side, Germany, so the instruments will be uniformly connected.

"A little picture in Dutch," Frank suggested.

"He can see better with his eyes than his head, already too," said Germany.

"All right, here (Fig. 158) is a picture," said Mr. Barrows good naturedly. You see in this way your instrument wiring is uniform, no matter what the ring may be. The green always to the line and the white to the coil, to ground. The reversing is done with the leading-in wires at the protector, not at the instrument. Use the plain wire on post No. 1, the green tracer on post No. 2 and the red tracer on post No. 3 for ground. In this way your instruments will all be exactly alike."

"But you said to reverse the bell terminals a while ago," the Doctor argued.

"That is the theoretical explanation. It is really what we do at the protector; it reverses the direction of the current through the bells."

"I can't see it that way," the Doctor persisted. "In the first and third sets, you ring with positive and negative current

and it passes through the bells exactly the same, going in over the green and out over the white."

"The Doctor is right. On two instruments we must reverse the green and white," Mr. Barrows acknowledged. "I did not think quite far enough ahead that time, and would

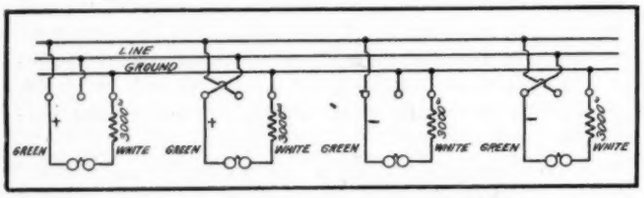


Fig. 158. Uniformity of Instrument Wiring.

have had you boys in trouble before tomorrow noon. Now let's get it right (Fig. 159)."

Mr. Barrows closed his book and from his desk took a box of cigars. "I know," he said, "you are almost pickled with the good cigars the Doctor has been dealing out, but I wish you would help me get rid of this supply. I suppose I could turn them over to you as an asset of the new company, but maybe we'd better smoke them up.

"Now that the 'day of departure' is near at hand, I cannot say that I am pleased to go. However, I am satisfied that you boys can get along and enjoy the fruits of your own labor. As for myself, I always have been a wandering sort of a fellow, but it is a poor way to live at best. If I had to live over again, I would stay in one place. When I come this way again, I shall be disappointed if the Craneville plant is not up to standard. I presume it is not the ideal plant at present, but it is far above the average. You can get a cart up hill if you all push in the same direction. It can be kept from going to smash down the other side by all getting in front and holding back. Work out your plans together, and then follow them to the letter.

"I don't think you need worry about your investment. It is here where you can look after it, and this telephone exchange is as permanent an institution as any in Craneville. Toll connections are a matter which you will have to consider within a year or two, but don't go into it until the Doctor can figure it out as being worth while; still you cannot afford to wait until a profit on your investment is a certainty. There is some toll buiness waiting now, but not enough to warrant the investment. You have seen enough of the 'cream skimming' process to know it doesn't pay. Indications will be unmistakable when the time comes.

"In adjourning our last meeting, there is nothing I can say that seems more appropriate than to advise you to keep in

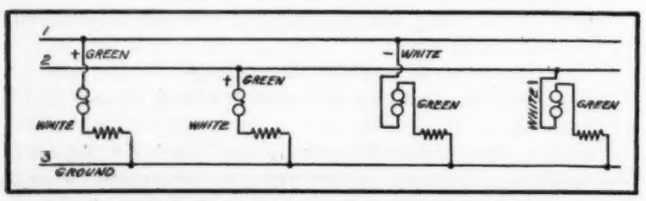


Fig. 159. Correct Connections of Four-Party Ringers.

mind the idea that there is always a better day ahead of you."

We will leave Mr. Barrows on the eve of his investigations in the great Northwest.

(The End.)

New Toll Line in Wisconsin.

The Wisconsin (Bell) Telephone Co. has just completed a long distance toll line in North Wisconsin between Hurley, Ironwood, and Rhinelander, which connects with the long distance line from Superior at Hurley. The towns of Mercer, Lac du Flambeau, Manitowish and other stations will soon be added to the same circuit. This line opens a region not hitherto reached by long distance toll lines, and greatly reduces the distance in reaching Rhinelander, Antigo, and other cities in northeastern Wisconsin.

Investigating Committee of Citizens Company Reports.

The committee of five appointed at the annual meeting of the Citizens Telephone Co., of Grand Rapids, Mich., to investigate the management and policies of the old board of directors and report at the adjourned annual meeting on October 12, has completed a report intended to remove any lack of confidence in the company and is circulating it in pamphlet form to stockholders. The investigation was asked for by Vice-President Robert D. Graham for the reason that some of the stockholders in the company had received a circular letter from what purported to be a committee of stockholders intimating that the policies of the directorate were not in the best interests of the stockholders and asking for an investigation. The names of seven stockholders appeared on the letter, but it was stated that the names of three were used without authorization.

Willard K. Spencer, of Ionia, declared those whose names were attached to the letter did not charge malfeasance or misfeasance on the part of the directors, but their objections related principally to the company's policies in regard to selling out to Bell interests.

According to Mr. Graham a proposition of sale was under consideration about three years ago and under that proposition stockholders would have received $125 to $135 for their stock. He declared the interests of the public would have been conserved and said that, at the time, the board was practically unanimous in favor of the scheme. Negotiations, he said, were dropped, and at present, he declared, there was nothing under consideration along this line. Mr. Graham insisted that every act of the board was open to inspection and protested any attack upon the company or its board.

"We find," says the report of the investigating committee, "that the circular letter was in effect anonymous and the signatures either not secured at all or secured under misapprehension of the nature or purpose of the communication. We consider the letter itself vague and ambiguous, but so worded as to arouse in the minds of many stockholders receiving it, a suspicion concerning the policy or management of the company and the feeling that the value of their stockholdings is in some jeopardy, which fear we consider groundless, and would like to dispel."

Discussion of the growth of the company along safe and conservative lines is made at length; the relation of the company to other companies is declared to be friendly; the reduction of the dividend from 2 per cent. to 1½ per cent. is defended as good business policy; and the committee declares the value of the stock has not been impaired from either the standpoint of integrity or earning capacity.

The committee further states in its report that the directors have not interfered with the management of the company and that no changes of employes have been made except for the promotion of greater efficiency. It is pointed out that the company now is a $4,000,000 concern with 3,000 stockholders. The report emphasizes the importance of selecting men "whose experience, judgment and business commend them as fulfilling the requirements of the position." The report concludes by asking for the company the continued confidence of the stockholders and the investing public and the support of its patrons

Long Distance Line in Australia.

It is reported that telephonic communication between South Australia and Victoria is available for the first time. The construction of the line has occupied about 18 months, the total distance being 480 miles with no intermediate stations.

We Will

A Good Motto—Local Financing

By J. C. Kelsey

Chicago has a motto. It is not a long winded one. It is a short terse expression, "We will."

Telephone men know Chicago pretty well. Your early acquaintance began many years ago, when you left your home to buy a small switchboard and a few telephones. You were embarking in a new and untried industry, and you unconsciously exemplified this motto: "We will."

It took a great deal of will power and courage to make that start. You did not know, neither did the original telephone monopoly know, what the development would be. Your possibilities were seemingly small. You timidly expressed the hope that your subscribers might some day reach 100. Surely, some day your city of 3,000 people could be educated to that extent.

You know what happened, and it reads like a romance. It even took on some of the aspects of a prairie fire which you remembered as a boy. Your subscription list grew and grew, and better still, from some standpoints, is still growing.

It has shown us that even Jack's beanstalk story might be true, since the telephone growth has been even more wonderful. You grew to a hundred, then to two hundred, and then some optimistic people could even see one thousand telephones bearing your company's name.

Your rapid growth threw you into new economic problems you came to know Chicago as a convention city. But his experience. So it came to pass that out of your problems you came to know Chicago as a convention city. But Chicago did not say "We will" to the assembled telephone men.

We have reason to be fond of the city for its unparalleled neglect. It always repelled us and heeded us not. Its financiers would not listen, and its great commercial club knew us not.

It has always been, and always will be, unconscious of one of its greatest commercial chances. No influence ever linked the name and reputation of Chicago to so many towns as did the telephone once made exclusively in Chicago.

I wonder sometimes if it was not the hand of Providence that made Chicago reject you. Ordinarily so energetic and vigilant, it allowed a great opportunity to pass. In blissful indifference, it allowed the telephone factories to scatter, and then capped it all by absolutely refusing to accept the Independent telephone.

The Chicago people would not pay for it, and preferred the alleged tyranny of the old company. Thus they let a great opportunity escape, and it was providential for you.

It has been providential all along that you could not get easy money in the large city markets. I know it was hard to be rejected, yet with the rates you enjoy, you could never have paid the price exacted by La Salle Street or Wall Street. The easiest way is always the hardest way in the long run.

All that Independent telephony has ever received or will ever get out of its convention city is a motto, "We will." We will stay at home, and finance our property there.

We will keep away from alleged financial houses in the cities. They have nothing for us.

We will plan to make our home town take care of its telephone growth. We will make our property the pride and bulwark of our community. We will make it the comfort of every investor. We will be fearless and constructive.

I saw a fine exhibition of the "We will" spirit last week. Somehow it reminded me of Independent telephony. It was at a church meeting—money had to be raised. That is nothing new or unusual in any business.

About 40 men were present, discussing a plan of finance. You should have heard the "hard times" talk. You should have heard how willing they were to borrow from a church building society. You should have heard the plans for financing the debt any way but out of pocket.

But churches, just as telephone companies, are local issues. No one is interested in a church in another locality. Likewise no telephone company can really arouse any financial affection, except at home.

Churches must be financed by their members. Telephone companies must be financed by the community. It is all very natural. I had this in my mind when it came my turn to talk.

I said that ever since the world began there had been hard times when men were asked to dig down in their pockets. There had never been a time when a group of men, needing money, did not imagine that somewhere else there must be groups of men with money, and anxious to loan it. There had never been a time when men did not think the grass was green just a little farther on. Further, that I had been intimately associated with so-called financial men and had never discovered that they had money they did not need.

Financial men, I said, only know, or pretend to know, men with money who might be interested, provided you pay usurious interest and still more ruinous commissions. Finally, that the conduct of a church was a local issue. You, of course, have heard all this before.

You have tramped the streets of cities looking for money because you had heard that financial men had money. You have spent railroad fare and have maintained hotels, believing that somewhere there was somebody who might invest money in your plant.

You have heard that the times were bad, and that, by and by, the matter of your finance could be taken up.

My final suggestion to the assembled 40 churchmen was that the church had better be dynamited, unless each member made up his mind to make it a local issue. Then it was that 40 men alone, out of a membership of 500, realizing the truth of the local issue, subscribed half of the needed money. They said "We will," and it was done.

I often think this about the telephone company. There are always a select few who manage the affairs of the company just like church trustees. Besides there is the long list of stockholders who each hold from one to ten, or 20 shares, just like church mmebers.

How much easier it would be to convince each stockholder that he should add 50 per cent. to his stock holdings or double them, than to send a committee of your directors or stockholders on an expensive and bootless search for money

somewhere else. If your own stockholders are sick of the matter, it will be awful hard to keep from sickening the money man, when he learned the details.

If each telephone company in need of financial assistance for extensions, would look upon itself in the proper way, there would be no trouble.

The money is in the locality. Thousands of the dollars of your community are sent away for skin games every year. Right in your town, a slick salesman has sold peach orchards in Arkansas. Well, he has sold some cement stock or maybe he has enticed some of them to buy an apple farm. Or, surely, he has sold them some land lying under the waters of the Florida Everglades.

Why should you ask any larger community to finance you, when nearly all financing is done in communities exactly like yours? Whose fault is it that people in your town send away precious money to scoundrels when you have the best investment in the world, lying right at their feet?

Go all over Chicago, New York, St. Louis or any of the larger cities, and you will find that the financial man draws his support from the small community. He is in competition with you, and the chances are that you and he, both, are dreaming of palaces far away.

Every note broker, or dealer in commercial paper in the large city, schemes and plans to find a market for his paper in your community bank. He knows that he can sell little of it to the various large city banks. To sustain life, he goes to your community and he thrives. He knows that which you, as telephone men, do not know that the real money of the world is under your feet.

Now it is not any telephone man's fault that financing telephone properties has its present limitations. We know that the financing of the Bell properties has not been the easy task that we, or many of its own employes imagine. It has been a very difficult job. It has taxed the minds of the responsible officials at all times. We are not alone in limitations on finance.

We do know now that we face a new condition. We must begin at home to build up a national reputation. All champions start with local reputations. If there are many aspirants for championship in a group of localities, some one is developed who is able to meet the selection of other communities. And this finally leads into a championship, not only national but world-wide.

Suppose, by some means, we manage to work out a plan whereby each telephone company can work out its financial situation. How long would it be before the financial institutions of the larger cities would be after you? Why should they not because you have become healthy and prosperous, and commissions could be made by outsiders on your work?

That is just what financial houses are laying for—something requiring little effort and a good profit. It is well known, too, that many bond houses have made up their minds that the telephone security has been foolishly neglected.

Bond and investment firms have much time for reflection these days. Their bond and stock sales are conspicuous by their absence. They know it is useless to try to sell foreign securities in your locality. But suppose they owned your securities and had paid for them. What better activity for their salesmen could be had than selling your securities to your people, who really don't feel the war or any other effect.

Investment selling, like farming, must be diversified—and it must be localized.

Why cannot telephone men handle and market their own securities? You never heard any man say it could not be done. Why not try it?

Is there any sufficient reason why telephone men shall not say: "We will finance our own business"?

Is there any reason at all why telephone men should not maintain a successful financial institution? And why can they not employ security salesmen to sell your securities locally? You know that the very human nature of your community will allow outsiders to appeal to your people when you cannot. Did you ever read a real estate agent's advertisement about the house you moved out of? You did not realize what a fine home you had until you left it.

Outside security salesmen would really and truly surprise your people about the fine telephone company the town has.

Would you say that a bank or trust company, with $250,000 capital, could not make a fair living in helping to take care of the financial necessities for Independent property worth over $250,000,000?

Suppose you owed a trust company or bank $10,000, and they called you. And suppose, of course, your earnings were really and truly good. And in the meantime, your general finances were at "sixes and sevens."

You would write the telephone trust company, telling of your difficulties. Experienced men would go over your problem with you, take the $10,000 loan temporarily, rearrange your finances and send skilled men there to sell securities right at your home door.

Or suppose you owed $50,000, had around 4,000 telephones, and your earnings were good; also that you lived in a community which was well off and able to absorb, easily, $50,000 of bonds or securities.

Would it not be reasonable to think that there should be such an institution, as I have mentioned, which could take the called loan of $50,000 temporarily, and send out its salesman at once after a new financial plan had been effected? Would you say that such a "plan" is not feasible?

All your life, you have heard much about telephone banks, and plans of financing. They were premature and usually advocated by men who were not in the telephone business to stay. Today, men know that they are going to stay in the telephone business, because it is a diversified business, untouched and unaffected by closing of stock exchanges, moratoriums or by war. It is the greatest average business in America.

It is a strange phase of human nature that outsiders are so effective in the world's progress. It is the outsider who discovers gold where the rancher carelessly drove his cattle. It is the outsider who detects a film of oil on the well water and discovers the oil, which the home folks had thought a nuisance.

It is the outsider, who comes to your town and sells your people, your subscribers and your stockholder, the apple farms, the pecan groves, the peach orchards and the rathole mining company stock. You could not sell them these things any better than you sell your telephone paper. Truly a prophet has a hard time at home.

My column is called a financial one. But I am not going to be bound by any restriction. It might as well be called a human nature column. Possibly I am an enthusiast on the telephone business. I have decreed to stay with the telephone business as long as it lives. I wish we could all live as long as it will live. I wish we could all make up our minds that there are no greener fields beyond than our very own.

It does look dark at times, and there are times when anything else looks better. But think of the last 20 years. Think of the great good will which you have yet to capitalize with the cheerful permission of your state commissions.

Take a leaf from this Chicago motto: "We will." We will renew our enthusiasm. We will take a broader view of our responsibilities. We will stay in the telephone business. We will, most of all, appreciate our good fortune, as well as our responsibility to stockholders and nations alike.

MORAL: "Co-operate!" "Stick together and hop to it."

Laying an Underground Telephone Cable in Brazil.

A great feat in telephone cable laying, under circumstances of exceptional difficulty, climatic as well as constructional, has been completed by W. Whyte Gailey, chief engineer and general manager of the Cia. Telephonica do Estado de Sao Paulo, Brazil, says The Electrician, of London. This cable was considered a necessity, owing to the increasing telephonic traffic between Sao Paulo, the capital of the state, and Santos, its principal port. The existing aerial lines were totally inadequate principally on account of the constant interruptions caused by severe climatic changes on the Serra or mountain range which separates Sao Paulo from Santos, and rises to a height of nearly 3,000 ft. The laying underground of such a cable was at first considered an impossibility, owing to the fact that the road had been abandoned by the government for 50 years, also that the part of it which passed over the top of the Serra ran mainly through rock.

It was finally decided in July, 1912, after a report by Mr. Gailey, to lay a 30-pair cable with very large air space and low capacity direct in the ground. An order was placed with the British Insulated & Helsby Cables, Ltd., for about 35 miles of lead-covered and armored cable with conductors weighing 40 lbs. per mile, the armoring consisting of two steel tapes with impregnated jute over the lead as a bedding and the same over the steel tapes. In addition to this a further length of seven miles was ordered which had to traverse a swamp; this was protected with two Merz tapes over the lead, then a layer of G. I. wires and four Merz tapes over all. All the necessary jointing materials were also ordered and included a number of specially designed watertight joint boxes for the length which ran across the swamp.

While the cable was being made in England, everything was prepared for an immediate start on its arrival, such as the building of special large cable wagons, cable drum carriers, special contractor's ploughs, tents and camping accessories for a large gang of men. The next thing to be considered was the state of the road, which had to be made suitable for the heavy traffic inseparable from cable construction work. The old road, along which it was decided to lay the cable, was built by the Jesuits about 400 years ago; a new road which was built between 1840 and 1850 by Senator Vergueiro was abandoned after the construction of the S. Paulo Railway in 1862, and became a road only in name. This old road being chiefly of soft clay, the rains from the hilly portion had washed deep gullies, some of which were over 12 ft. in depth, all of which had to be filled up and levelled. Some idea of the difficulties can be imagined by the fact that one hole alone took 300 wagon loads of earth before it became possible of transit. There were 25 small bridges over streams which had to be constructed, the original bridges having either disappeared or being so flimsy that they would not have supported the weight of the drums of cable. In all the company spent about £3,500 in repairing the road.

The cable arrived in January, and, after the usual delay in the customs, the construction was started on February 6, 1913, and finished on August 20 of the same year. The gang of men was composed mainly of Portugese, none having any previous experience in the work. Even such important work as jointing had to be done by men trained by the company, under the personal supervision of Mr. Gailey. Within the first three months of the construction, three strikes took place, but these were speedily settled, and afterwards the personnel worked under almost military dicipline, so much so that it was possible to conduct the gangs by means of a whistle.

After getting out of the city of Sao Paulo the ploughs were brought into action and they did good service until the top of the mountain was reached, in breaking the surface to a depth of 15 inches. In the morning the foreman in charge divided the trench into lengths of 10 meters to each pair of men (pick and shovel), and as each pair completed its task the men moved on to the trench to be opened ahead. The greatest difficulty was the transport of the cable, the drums each weighing about four tons, as the base of operations and the nearest point to the route was the township of Sao Bernardo, six miles from the nearest point of construction, and 25 miles from the farthest point, over an exceedingly bad road.

The length of the cable is 41 miles, and it is buried at a uniform depth of three feet, except at river crossings where it is carried in galvanized pipes. The cable is brought into test boxes every 2½ miles, and so arranged that Pupin coils can be introduced should the traffic to the interior demand it at any future date. Every joint was staggered to avoid cross talk and desiccated to a pressure of 30 lbs. per square inch to insure good plumbing. The conductor resistance was measured from Sao Paulo to each joint as the work progressed and these joints carefully marked by pieces of angle iron driven into the ground 3 ft. with 3 ins. to 4 ins. showing on the surface. The most difficult part of the construction was the journey down the mountain itself, a distance of five miles, where the men, in a lot of cases, had to be suspended by ropes over the precipices to enable them to dig out the trenches in preparation for the reception of the cable, which had to be taken off the drums at the top and carried down the mountain on the men's shoulders, the men being spaced five yards apart, the length on the drum being 440 yds.

Only in one place is the cable run as an aerial, and this on the Serra, where it spans a gorge 87 metres across and 500 metres deep. Here the cable was suspended on a ¾-in. steel stranded rope. After this the cable follows the road again for a short distance, then is led down a ravine 350 metres deep, then it rises some 50 metres; this saved about two miles of cable and avoided excavating with dynamite. After picking up the road again it follows for some 30 yards, then leaves it for good and follows a spur of the mountain through virgin forest and mountain streams to the bottom of the Serra, over some very steep grades, some of them being as much as 90 per cent.

From the bottom of the Serra the cable lies for some seven miles across swampy land, and there the special Merz type of armoring came into use. This cable was completed and opened for commercial service on August 20, exactly six months and 14 days from its commencement, including a delay of 20 days lost while waiting for the last lot of cable. Since its opening the cable has been a great success, as perfect speech with complete silence and absence of cross talk is obtained.

During the latter part of the construction Mr. Gailey had the very able assistance of Mr. Worsey, one of the three engineers lately engaged by the company, who, after his arrival in June, took charge of the work between Santos and Cubâtao, a village near the foot of the Serra.

Experiences in Locating Cable Trouble in New Zealand

Correspondent at Sydney, Australia, Contributes Accounts of Several Interesting Cases of Cable Trouble in New Zealand—Ingenious Experiments with Tone Test Method Tried with Success After Studying Diagrams and Descriptions Published in "Telephony"

By E. Noble

A new 610 pair cable laid in metal ducts for over three miles was being joined up by the splicers when they were called away to other work. On taking an insulation test with the megger when making a start again three weeks later, every wire in the cable was down a full ground on each.

A test at the exchange end with two dry cells, a detector, and the cable wires in series to ground just gave a slight kick of the needle. Making the same test at the first branch, two miles out, (Fig. C.) gave a reading of 10 scale divisions, so I decided to set up the tone test there. For the tone test I used a 4-ohm door bell with the hammer cut off close to the armature, two dry cells and a switch in series with the primary of an induction coil from an old time Ericsson series set.

Four pair of wires were bunched and placed under one terminal of the secondary and a wire wrapped around the cable sheath was placed under the other terminal. For an exploring coil I had an induction coil with an Ericsson second or watch case receiver joined in series with the secondary winding, leaving the primary open.

A test by holding the induction coil at right angles to the cable at the first manhole at the foot of the pole where the first branch came up, did not give much of a tone, but it showed the trouble to be on the exchange side. Hence I reversed the tone set by joining up the faulty wire and earth to the primary and eight cells, and the buzzer and switch to the secondary winding. That gave a louder tone. I then tried the next manhole and heard the tone but lost it at the next manhole, so I knew the game was close by.

On opening up the cable at that manhole, the exchange side tested O. K., showing the fault to be towards the tone set. Then I went back to the last manhole and removed the sleeve from the cable. A test showed the exchange side faulty.

Another test with the detector gave the same reading from either manhole. On stepping the distance out to midway between the manholes, I noticed an electric cable splicer working at a manhole on the other side of the road. A few questions elicited the fact that some alterations were being made to a cable that was bonded to the rails at that point and was then brought up to an overhead negative return.

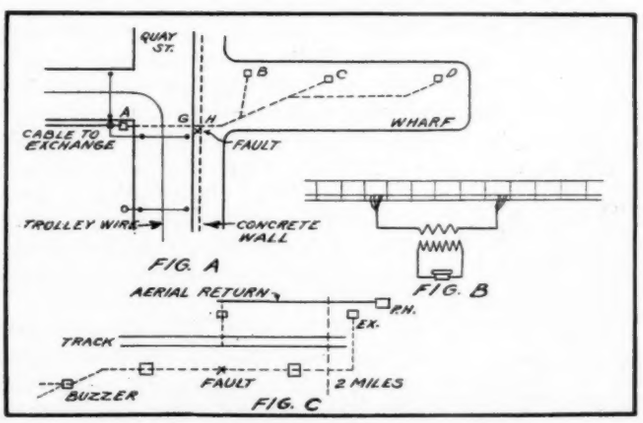
Although the telephone cable had only been drawn in 12 months before, it looked very much like a case of electrolysis as, when I inserted an ammeter across the two ends of the cable sheath in the manhole nearest the exchange, the stray leakage current it was carrying varied from one-half to two amperes at times, the direction of the current being towards the fault with the telephone cable sheath positive to the rail at the manhole. Tests at the other manhole gave the same results.

That trolley current was sentenced there and then. On starting to draw the faulty length of cable out, it showed a strong inclination to remain where it was. Lowering the gear on the winch started it on the outward journey, not the whole cable though, only the sheath. When the inner end of the part withdrawn was examined in the light, there was certainly a little brownish red oxide of lead on it due to electrolytic action of stray current. But when the whole cable was drawn out from the other manhole and the sheath examined where it had parted, it was found that the cable had been pierced by a large sharp piece of hard rock commonly known as blue metal. The trolley current was acquitted and the credit for the trouble transferred to a steam roller. The roller had been use to roll down a layer of big rocks which formed a bed for a concrete foundation that was to carry some new patent paving blocks.

Half a dozen subscriber lines in a 50-pair cable suddenly came in faulty. The cable fed about 25 shipping and forwarding offices on the main wharf and run aerial from the exchange to the corner (*A*) where a 52-pair box was multipled out. (Fig. A.) From there to end of run the cable was armored, with three more 52-pair boxes multipled out (*B, C* and *D*).

Down the pole and across under the asphalt roadway the cable was run in metal ducts to within six feet of the concrete breast work. Previously there had been a splice and some alterations made at this point. The cable from end of the metal ducts to the breastwork was laid in a wooden trough and covered with bitumen compound.

The trouble seemed a peculiar one as one leg of a pair would test open with the insulation good, while the insulation of its mate would be right down. At first the subscribers on the faulty wires were changed over to some spare pairs. But the cable continued to go down, so the most of the subscribers were kept going with temporary twin leads from another cable on the opposite corner. The total length of the cable was



Diagrams Illustrating Trouble Locations.

about half a mile and a close examination of the aerial portion from the exchange to point *A* failed to reveal anything serious.

Under the wharf the cable was suspended high up, clear of the salt water. For this reason it was only possible to examine it from a boat for about an hour and a half before and after high tide. As the armor had been removed to make the branches at *B* and *C*, these points were carefully examined and found O. K., though a portion of slack at the far end, *D*, had been jambed nearly flat by a small boat. This part was cut out but still the trouble remained.

By this time a week had passed, so the writer set up the tone test at the box on the pole at *A*, looping up the lugs of four pairs and and using them as one leg and the sheath as the other leg.

The cable going towards the wharf was armored up to within two feet of the branch joint to box *A*, so there was not much cable sheath to listen on. Still I seemed to get a slight tone on that side, but none at all on the exchange side so I

knew the trouble lay somewhere between *A* and *D*. The only other place where I could listen on that side was under the wharf at the branch joints at *B* and *C* where the armor was removed.

At the time the tide was not favorable, so I removed the tone test and set it up on the box at *D*. Then I went back to *A* and listened for the tone but could get none which made me more certain that the trouble lay between *A* and *D*. When the tide was favorable, I took a test under the wharf at the joints *B* and *C* and could get tone at each one. Then I went close up to the breastwork at *H* and removed the armor from cable and could still get tone. That narrowed the space down to between *A* and *H*. I then came up from under the whart and had the roadway dug up at G and the bitumen removed from the cable close to the breastwork. A thorough test was made but no tone could be obtained with the buzzer still at *D*. That made it look as though the trouble lay in the three-foot concrete wall between *G* and *H*, which seemed hardly possible as the armored cable was embedded in the solid concrete, no duct being used. I shifted the tone set back to box at *A* and could then get a tone at *G* so I knew the trouble was in the wall, sure enough.

To prove it to some who doubted, I cut into the cable at *G* and took a test with a megger on three pairs. The exchange side tested O. K., showing the trouble towards the end ot the wharf. (One leg of one pair showed good insulation towards the end of the wharf.) I then went under the wharf and made a similar test. The exchange side then showed faulty and the wharf side clear. Still some of the officials present could not accept the tone location as conclusive, and acting on instructions, the writer put battery on the one leg that showed good towards wharf end from *G*, the other side of battery being grounded.

Going under the wharf each wire was pricked with one leg of a grounded receiver, it being assumed that if the wire with battery on could be found on the *H* side, then its make could be tested. If it was faulty towards exchange, that would be evidence enough and the conduit laying department could be instructed to punch a hole and place a piece of duct through the wall for a new section of cable.

After going over 52 pairs twice, I never got a click. As the trouble lay in between two points three feet apart, it was suggested that it might be possible to pull the insulation paper out from off the wire the battery was on and, as there was undoubtedly water at the fault, possibly the paper, it it broke off far enough in the cable, might show traces of moisture.

The wire and paper were given a gentle pull and about a foot of the wire (not the paper) came out. It bore indisputable proof at its tip in the shape of a little blackened nob of copper, that something pretty swift had fused the wire. After a new piece of cable had been cut in, the faulty piece was dug out of the concrete. An examination showed that about eight inches of it had been squashed nearly flat, either before or during the course of being concreted in, and that a hole about one-half inch square had been burnt out of the sheath by some strong earth seeking current.

The trolley current received the credit again and I think it was entitled to it this time. How it got into the cable was this way: Alongside of the pole at the corner was a railway pole to which were guyed the wires that supported a 550-volt trolley wire. Pull off wires from Main and Quay streets were both guyed to the same pole and the one coming from Quay Street just cleared the side of the telephone pole.

Down the same side of the telephone pole came the ground wire from the cable box and it had been broken down below the pull off wire. The insulator in the pull off wire between the trolley wire and pole must have been faulty at some time, during which it swayed up against the ground wire (the telephone pole was charred at this point) but as it was broken on the ground side, the current ran up to the cable box and jumped across the carbons into the cable wires. Then, as the wires in the cable where it was squashed, must have been very close to the lead sheath and offered a path of less resistance than the air gap of the carbons at the exchange, the current took it, puncturing the sheath. Thus moisture in the sacking between the lead sheath and armor crept into the cable.

The reason why,the one wire showed good insulation towards wharf from *G*, was that it had fused back about nine inches from the puncture and the moisture had not quite crept back that far.

For tone I used ten cells on one side of a home-made pole changer. It vibrated irregularly and that made the tone quite distinctive and easy to pick up most of the time in spite of the noise of the heavy traffic on the concrete wharf overhead.

Two subscribers in a town nine miles from the main exchange reported their telephones out of order. A test showed all four wires to be in contact and grounded. The wires, which were in cable the entire distance, left the exchange in a 100-pair cable finishing the last four miles in a 14-pair cable. The trouble was a good one for a loop test, the four wires being in contact and grounded while the insulation of the other wires was all right.

The wire chief made a separate loop test with each wire, getting practically the same location from each, the trouble appearing to be about 7 miles out. Three men with a portable gas engine and air pump were sent out to a splice about seven miles out. The air plant was connected to the nozzle on the splice and dry air pumped into the cable, at the same time a search being made for any air leaks.

Through a misunderstanding the men never looked beyond a certain point. After three days pumping and testing with no results, the writer was instructed about noon one day to get busy with the tone test.

It looked the easiest trouble I had met so far and I thought it was just a case of going out, setting up the tone set and walking straight to the trouble. The wires terminated in a cable box outside the township postoffice. The tone set was set up on the porch of the postoffice, a twin lead being brought down from the cable box to the tone set. At the box one leg of the lead was connected to the four faulty wires and the other leg to the cable sheath. The buzzer was set in operation but the tone could not be picked up from the sheath. The receiver was changed, then the induction coil, and then everything else I could think of, and was on the homeward journey when darkness came on, without having heard the slightest buzz.

That night I came to the conclusion that something must have been open or joined up wrong. Up to lunch time the next day a tone could not be obtained. At that time while the other men were lunching, I took some tests with a homemade slide wire bridge, and found the joint resistance to earth, of the four wires, to be only 43 ohms. So I joined ten dry cells, faulty wires, buzzer, sheath and the switch in series and adjusted the armature until it buzzed. Still I could not pick up the tone off the sheath, although I could get it off either one of the wires leading up to the box.

The faulty wires, dry cells and sheath were next placed in series, a small pocket compass put on the cable and the direction of the current reversed with two switches. That made the needle swing around but it continued to move when the current was off, due, I think, to telegraph currents, the sheath being grounded at each end. Thinking about the case, I remembered reading of electric light companies using a low-wound receiver to locate a fault on a main by the fall of potential method. I had no low-wound receiver with me but did the next best thing by joining up the primary of an induction coil in parallel with the cable sheath, with a receiver connected to the secondary. That gave me a good tone, it

even not being necessary to hold the induction coil anywhere near the cable.

To keep the resistance of the parallel circuit down, four bare copper wires were twisted together (Fig. B.) and used for connecting the primary of the coil to the sheath. Even then the coil circuit had many times the resistance of the sheath but some of the current came through the coil and the receiver, a very sensitive instrument. Testing in towards city, taking a test about every half mile, the tone was lost at the fourth test.

The next morning a test was taken midway between the last two and the tone was obtained. The distance between tests was halved repeatedly until the tone again was lost at a point three spans from the last test. On taking a test in the middle span, I could still get the tone and was coming down the ladder when I noticed a bullet hole in the cable about two yards further along towards the city. The bullet had struck the cable at an angle, puncturing the sheath and then grazing along the wires stripping off the paper insulation and crushing a portion of the sheath on the bare wires.

Shooting in the way of rabbits and hares was plentiful in that district. The kingfisher also has a habit of sitting on the cable messenger and is a temptation to any one with a gun. The cable evidently received what was intended for a bird. I mentally thanked the sport who let that bullet go as I enjoyed that trouble afterward.

The wire chief's loop location was pretty close, being correct to within a hundred yards.

The receivers I used on this trouble were out of adjustment in that they would not respond to a very weak current. This was proved as they had to be discarded on a subsequent trouble. The writer was convinced then that it is worth while to any company having cable trouble to have a good set, made up by some one who understands the principles involved, and kept in good order ready for immediate use; or better still, to secure a good set from some firm manufacturing tone sets.

I always gathered up some scratch gear when a fault occurred as cable testing was not included in writer's duties. I became interested in the tone method of fault-location through reading, in TELEPHONY, the diagrams and experiences of others.

It seemed such a simple method compared to the barbarous way of slashing the cable sheath here and there by the cut and try method, that I started experimenting in my own workshop in leisure hours and soon had a good grip of the method. When the next trouble occurred, I was permitted to try the tone test and it quickly made good.

In a workshop test, it is possible to get quite a loud tone, but on actual troubles, one has lots of other sounds and noises to contend with. On the wharf trouble, when testing below the wharf, the noise of the traffic overhead was such that at times it was necessary to wait until a quiet moment arrived. Again on the bullet trouble, there were over 30 telegraph and telephone trunk circuits on the same lead and with weather, consisting of squalls of rain and gushes of wind, it was not easy to pick up the tone.

I experimented to overcome that by trying to amplify the tone current received off the sheath: First, by inserting a tube containing carbon granules and magnetized iron filings, in the core of the exploring coil and then connecting a battery and receiver in series with the tube; second, by connecting the receiver and exploring coil in the usual way but clamping a solid back transmitter containing some iron filings among the carbon in the granule cup, to the diaphragm of the receiver and then joining another receiver and battery in series with the transmitter.

The results obtained were not startling but left me thinking that any firm with a well-equipped laboratory should be able to turn out a good repeater or amplifier. It would mean carrying one dry cell and repeater in one's pocket while searching for the tone, but I think the benefits would compensate for it.

If the tone current is left on the faulty wire continuously, it seems to noise up every other subscriber line in the cable and nearly every other line terminating in the exchange as well.

It does not stop conversation, but annoys the subscribers, so I always left a helper at the buzzer with instructions to put the tone on for a three-minute period at 20-minute intervals.

It is always helpful if the current is interrupted quickly several times towards the end of each period. While one is listening on the sheath, the breaks can be picked up nicely, thus guarding one against being led astray by any grounded power generators.

The New Zealand Government has secured a number of Matthews Telefaults since these troubles occurred.

Farmers Mutual of Columbia City, Ind., Has Good Year.

At the recent annual meeting of the stockholders of the Farmers' Mutual Telephone Co., of Columbia City, Ind., a proposal made by the Whitley County Telephone Co., of Columbia City, to merge the two properties on the basis of a valuation of the properties to be made under the direction of the Indiana Public Service Commission, was voted down. The Farmers' Mutual Telephone Co. was shown to be in a prosperous condition. The financial report, made by R. R. Scott, general manager, who has had charge of the operation of the property for the past nine years, showed total receipts of $19,464 and total disbursements, $19,690, leaving net cash available $1,597. The company has 270 miles of poles, 1,400 miles of wire, 1,775 telephones in service. The original investment in the system was 51,100, of which $23,000 was in stock and $28,100 in bonds, and the total invested in construction is now $99,360.

The officers of the company for the ensuing year are as follows: President, Albert Bush; vice-president, E. E. Rindfusz; treasurer, W. H. Carter; secretary, Clinton Wilcox; manager, R. R. Scott. The executive committee consists of Albert Bush, W. H. Carter and Clinton Wilcox, and the purchasing committee of Albert Bush, Melvin Blain and Thomas Jellison.

Bell Cancels Improvement Plans for Anniston, Ala.

The Southern Bell Telephone & Telegraph Co. has announced that owing to the financial stringency caused by the European war the proposed expenditure of $66,000 for improvements in Anniston, Ala., will be reduced and only the immediate needs of the company will be provided for. It is estimated that $25,000 will be the sum expended. On July 1 the company announced an advance in rates, in view of the contemplated improvements to be made. This raise will not be enforced and refunds will be made to those who have paid the advanced rate.

The company will leave the present rates nominally in effect, but will apply a discount of 50 cents a month for prompt payment for both business and residence telephones, leaving the net rates $3.50 and $3 for special line business and single line and two-party business service. The rates for single line and two-party residence telephones will be $2 and $1.50 respectively.

Growth of Long Distance Lines in Saskatchewan.

When the Saskatchewan government took over the telephone system in 1908, says Electrical News, of Toronto, Canada, there were only 497.2 miles of long distance pole line in the province. At the end of April, 1914, this mileage had been increased to 3,393.17, connecting up 300 towns and villages in the province and enabling communication with over 17,000 local subscribers and 7,989 rural subscribers. By the end of the present season a further remarkable extension of lines will evidence the activity of the provincial department.

Public Relations of Utilities in Theory and Practice

"The Public Be Benefited!—Persuade the Public It Is Being Benfited!"—Relation of Railroad Experiences to the Telephone Business—Evidence of Better Things—The Cultivation of Public Sentiment by Various Leaders Having Mistaken Ideas

By Public Relations Engineer

In a recent article the writer suggested a truce would be better than further controversy between the public on the one hand and the utility servants of the public on the other. It seems to me that the interviewing of President Wilson by the presidents of the railroads is a step in the direction of this sort of a truce.

A reporter who claims to have been with the railroad men as they were leaving the President, after the interview, says the railroad presidents informed him that their chief desire was: "To emphasize the fact that the railroads are in a poor situation; that the war has brought about such a condition that the utmost care is needed on the part of all regulative authorities to prevent an upsetting of plans that might be devised for tiding over the strain."

Another newspaper writer says: "It is assumed that railroad securities to the amount of not less than four millions of dollars, par value, are now owned in Europe. Owing to the war, these securities will be thrown upon the market in large blocks, at whatever price they can be sold for, on the first day that the stock exchanges are reopened."

"Commissioner Thorne, of Iowa, who is chairman of the commissioners of the Western states, believes that the merits of the plea of the railroads, for permission to raise rates, should be judged only upon the evidence submitted; that he, himself, is in duty bound to maintain a neutral attitude. He believes also, that the verdict of the Interstate Commerce Commission should be respected as the highest judgment obtainable. He expresses the hope that the newspapers will maintain a neutral attitude, also. Certainly this is not asking more than fair play. It makes really no difference to the railroads from which source their necessary revenue comes—whether from freight, or from the passenger traffic, or equally from both. . . . It seems like better business, however, to place charges for public service as nearly as possible where they belong," says a third newspaper editor.

"Passenger fares should be based as nearly as possible on the cost of passenger service," says another editorial writer in commenting on this case. "It seems to be the opinion of those who are best informed, that even the New Haven railroad, whose passenger earnings constitute a larger proportion of its entire income than is realized by any other railroad, has been receiving less than cost for its passenger service."

"It seems not a violent inference to say that if the separation of passenger and freight costs makes the showing it is expected to make, it will not be long until there will be a general increase in passenger fares," says the editor of a technical utility publication.

Railroad Experiences and the Telephone Business.

And now I imagine I hear some one saying: "What has all this to do with the telephone business?" My answer is: The telephone has recently been put under the same regulative authority that controls the railroads.

Unless utility men adopt a policy which includes something more than a mere wordy argument, I predict that the tendency of all regulative action will be to reduce the rates charged for the service. In consequence of that reduction, there will be a reduction of the returns to the owners of utility properties and businesses—not excluding the telephone!

I believe the railroads relied too long upon the assumed ability of certain individuals to prove to the "regulators" that it cost $2.40, or more, to stop and start a passenger train, while they were proving at the same time to the investor, that the same train could be stopped and started for not to exceed 40 cents. I think they ventured too far with the contradictions which actually existed between their arguments to prospective investors and their arguments to state and federal officials.

The Dawning of a Better Day.

I think it is evidence of the dawning of better things, when, by their actions, the presidents of the principal railroads prove their willingness to have everybody understand that: "Their chief desire is to emphasize the fact that the railroads are in a poor situation."

The dawning of a better day is indicated when the presidents of the principal railroads of the country give unquestionable evidence of the fact that they have no further reliance on mere argument, no further confidence in information of the wordy sort, no further dependence on a "publicity campaign" that lacks the persuasive element.

The dawning of a better day is shown when the presidents of the principal railroads prove by their actions that they, too, have learned that arguments frequently prove nothing more than that one of the disputants is more clever than the other. I think it is evidence of the approach of better things when these railroad presidents show by their actions that they intend to rely henceforth upon persuasiveness rather than upon the old-fashioned publicity—upon persuasiveness rather than upon the old-fashioned property rights or privileges.

Furthermore, the plea of these railroad presidents is now being put in its most persuasive form. I am hoping, therefore, that we have reached the point where conditions must begin to improve. Surely it ought not to be possible for conditions to grow very much worse, at least so far as certain utilities are concerned.

I mention this conference between the presidents of the principal railroads and the president of the United States because I think it should encourage telephone men. In common with other utility men, I have, in times past, been criticized by certain leaders of railroad interests who were "dealing with matters at the state capitol." In their "dealings" they relied upon the old-fashioned method, whereas the telephone men had learned, by bitter experience, that it was better to rely upon persuasion—better for them to plead than to command.

Pushing the Plea of Persuasiveness.

I have referred to the railroad men's conference at the White House because I believe the time is fast approaching, if not already here, when telephone men will have increasing power of persuasiveness.

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Some six or eight years ago, in talking to a state utility convention, I suggested that the very nature of the telephone business—in an agricultural state—was such that in it men would be compelled by the force of circumstances to work out, first of all, the most substantial, the most satisfactory and the most permanent practices for the balancing of the interests of the owner, the user of the service and the public. I said, also, that the nature of the telephone business was such that in it, first of all, experience would demonstrate how to satisfactorily balance the various claims which have been made for "local autonomy," "state's rights" and "federal authority."

Telephone men are in a position to command attention and to persuade the public. They are in a position to command better attention and to deal with the public more persuasively, perhaps, than any other one class of utility men. They are in this position for the reason that a larger percentage of the public, especially in agricultural states, have learned by actual experience, that the commercial telephone man was right, even when the mutual telephone man and the patrons of the commercial company were accusing him "of stretching the truth a little" for his own selfish benefit.

Many of the local communities of the agricultural states have suffered because they refused to be persuaded by the pleas of certain fair and square telephone men. Furthermore, this same fair and square telephone man, who was formerly suspected of coloring things for his own benefit and who is now known to have been right, is the man who can put before the public most persuasively the true picture of the existing conditions.

I am not unmindful of the fact that only a very short time ago, many of the administrators of the larger utilities would have ridiculed the suggestions herein contained. I am conscious of the fact that some of them will still ridicule these suggestions. But I think, even the largest of the administrators of utilities are coming to appreciate more and more the master stroke that was made when the administrators of the largest telephone company in the world notified the government of the United States that it wanted the most cordial relations it could get—with the public.

I wish to suggest that the time is ripe for telephone men to increase their persuasiveness by getting, first of all, a clear idea in their own minds, concerning the present state of affairs and then familiarizing themselves with the exact words that will best express to others, a true picture of the existing state of affairs. Utility men must lead those who are now leading public sentiment, if the public is to be led to a better appreciation of the true state of affairs.

In a former article, reference was made to the "woe" which an ancient inspired Hebrew pronounced upon every leader who put bitter for sweet, and sweet for bitter—who put wrong for right, and right for wrong. Effort was made to show that utility men are facing certain contradictions; that these contradictions are to all intents and purposes the same as putting bitter for sweet and sweet for bitter. It was endeavored to show, also, that an economic disaster or woe awaits everyone who fails to master these contradictions.

I think it is safe to predict that the time is already fast approaching when the farmer, the merchant, the manufacturer and those who erect business blocks in the cities, will be prevented from the juggling of their figures. The time is fast approaching when none of these classes will be allowed to have one set of figures for the assessor and another set of figures for their financial statements to their bankers—just as the public is now endeavoring to prevent the utilities from having two different sets of figures for these two different purposes.

Be that as it may, the day has already arrived when utility men are actually compelled to conduct their affairs according to the higher standard. The day is already here when utility men are compelled to keep their figures straight. As I have said repeatedly, I think this is an unequal requirement—a double standard, an unfair arrangement. But it is here and it is a requirement.

Reference has been made to the fact that the early religious magicians kept the sources of their power secret. The kings-by-divine right were once kept out of sight. The "doings" of Napoleons of finance and of captains of industry, were once "kept dark." But the remotest privacy of utilities is being disclosed, now to the public. The secrets of every business may some day be turned inside out to the public, as thoroughly as the secrets of the utilities have already been disclosed. But the utility men cannot wait for, even though they may help to hasten, that day.

Utilities Appealing to the World's Public Opinion.

Recently I traveled on the same train with a number of men who were returning from an important convention. These men had been at the convention in question, principally by reason of the fact that they were builders of the public sentiment of that portion of the United States. Conversation turned upon a prominent newspaper item, which had appeared on that day, concerning the conference of the presidents of the railroads with the president of the United States. It should be explained, I think, that some of these leaders of public sentiment were educators—men whose influence over the thought of the people of their region is great, while their participation in the commercial activities and responsibilities of their respective communities is small.

These men wished to know whether this "move," on the part of the railroad presidents, was not merely a trick to "lull the people to sleep." They seemed firm in their conviction that the people should not be "tricked" into permitting the railroads to secure the sympathy of the public. They contended, among other things, that the railroads were deserving of no sympathy, for the reason that they had been deceiving the people with two contradictory declarations of value. Here we have one of the elements that must be dealt with by utilities in general!

When I asked whether the farmers and merchants had not practiced the self-same contradictory method of making their property values as small as possible to the assessor and as large as possible to the prospective buyers, they admitted the fact. But they immediately proceeded with the argument that no one man among the farmers, and no one man among the merchants, had succeeded in gaining as great a financial advantage as they assumed had been gained by the railroads and certain other utilities.

These leaders of public sentiment were then asked: "Do you object to the railroads merely because they have succeeded with their deception? Is your objection not so much to deception as to the degree of the 'success' of the receiver?"

Is Largeness and Strength a Crime?

As a defense for their consciences against questions of this sort, they seemed to have an idea, more or less hazy, that it was not so much the success of the alleged deceiving railroads that they were opposing; but that their opposition was more to the size and the strength of the railroads. Their opposition was based more or less upon an unadmitted but none the less real assumption that the railroads are menacingly large and menacingly strong.

They seemed to feel it to be their conscientious duty, as leaders, to cultivate a public sentiment which would compel

every large and strong business undertaking to refrain from the use of deception or secrecy. And they assumed that railroads and certain other utilities are of the larger and stronger classes.

On the other hand they seemed to feel that it is their conscientious duty, as leaders, to cultivate a public sentiment, which, if it did not encourage, would surely excuse the use of deception, on the part of those business undertakings which are smaller and weaker. They assumed that farmers and merchants belong in the latter class.

Is Smallness and Weakness a Virtue?

When they were asked whether, as leaders of public sentiment they felt justified in taking the position that deception was wrong when practiced by the stronger and the larger, but right when practiced by the smaller or weaker classes, they admitted that they had not given that point as much consideration as it might deserve.

It is plain, I think, that those who, in recent times, have had the greatest influence over public sentiment, have made a false virtue of smallness and weakness. They may have been, and in many cases doubtless were, unconscious of their mistake. The great difficulty, as it seems to me, is that this mistake is almost if not altogether woven in as an indispensable part of the economic creed of a large portion of the leaders of public sentiment. For that reason it is difficult to persuade them to acknowledge their mistake—difficult to gain an admission from them that they see this mistake. And, it is even more difficult to persuade them to correct it.

Some of those who have had the greatest influence over public sentiment in recent years seem to feel, more or less, a selfish interest in perpetuating this mistake—as a sort of comfortable fiction—even after they have begun to recognize, through the haze, the probability that it is a mistake. Some of those who have had the greatest influence over public sentiment in recent years, seem to be naturally inclined to keep this mistake pushed back into the fog of mystery, rather than to help pull it out into the bright sunlight of investigation.

Making a Real Vice of Largeness and Strength.

The foregoing reference to the leaders of public sentiment has been made to prove to the reader that the author does not overlook the mistakes of the leaders of public sentiment. I now wish to direct attention to what seems to me to be an equally serious mistake on the part of certain leaders of utilities.

The necessity of "making as good a showing as possible," as to size and strength—as a basis for selling stock and bonds—has already been referred to. There is an undeniable pleasure that is experienced from being connected with an undertaking which is large and strong. This pleasure can easily develop into a sort of intoxication. There is just as much of a temptation for the utility leader to becloud his mind and conscience with the false virtue of exaggerating his size and his strength, as for the before mentioned leaders of public sentiment to denounce largeness and strength. Furthermore, the people have been learning to their sorrow that the exaggeration of the size and strength of an undertaking—the exaggeration of its capital and its profits—is a real vice, a crime! We do not seem to have learned this fact as regards its application to every business—as yet. But it seems to have been quite finally settled, in the mind of the public, that it is a crime for the big organized undertakings to seek to "expand" their capital or to unduly "increase" their profits.

If there could be any stronger indication of growth in the general appreciation of persuasiveness, than has been given by the appeal of the various nations for the good will of the United States, it might be found in the appeal of the railroads to President Wilson.

Another evidence of the power of persuasiveness is given us, I think, in President Wilson's suggestion that a three years' truce be declared between the wage-seeking and the wage-paying miners of Colorado. I believe the wage-seekers' union have relied too long upon the power of the dynamite bomb and the boycott. The wage-payers have relied too long upon the assumption that those who have a legalized title to the earth may hold it out of use if they so desire, while men suffer in consequence of their inaction.

I believe the railroads have relied too long upon the assumed ability of certain individuals to prove to the railroad commissions and legislative bodies that it costs $2.40 or more to stop and start a passenger train, while at the same time they are proving to prospective investors, that the same train could be profitably stopped and started for 40 cents. I think we have all ventured too far with these various undeniable contradictions.

I think it is evidence of the dawning of better things, when, by their actions, the presidents of the principal railroads prove beyond question that they desire "to emphasize the fact that the railroads are in a poor situation."

By flaunting their enormous size and by parading their unequaled strength, the railroads, or other utilities and other businesses, may have frightened the public. If so, by proving that they are "in a poor situation," they may regain sympathy and restore confidence.

When Utilities are Meekest, They are Strongest.

For my part, I think it is the dawning of a better day when the presidents of the principal railroads give this sort of unquestionable evidence that they will no longer rely upon mere argument; that they have no further confidence in mere "information" of the wordy sort; that they place no further confidence in a publicity campaign that lacks the element of persuasiveness—if it has not "by your leave" in its every tone and accent.

Surely it is the dawning of a better day when the presidents of the principal railroads show by their actions that they, too, have learned that arguments frequently prove nothing more than that one of the disputants is more clever than the other. The dawning of a better day is indicated when these great men prove by their actions that they intend to rely henceforth upon persuasiveness, rather than upon the old fashioned publicity. I think it is evidence of the dawning of a better day when these great men begin to rely more upon persuasiveness and less upon legalized "rights" or privileges.

Utility of Telephone in Directing Gun Fire.

The very important part played by the telephone during the heavy artillery losses sustained by the Germans in their retreat near Meaux has just come to light in London. The Germans had taken up a position in a sunken road, cutting through the crest of a long undulation. Three miles away the artillery of the Allies began to play on this position. Although the target was out of view and the artillery gunners firing indirectly, the Germans were almost exterminated. Then it was seen the wonderful firing from this unseen battery was being directed by telephone. An officer on an elevation nearly a mile distant studied the position of the Germans through his field glasses and noted the direction of the bursting shells. Through the telephone, of a portable type, he issued directions to his distant gunners regarding their range, with the result that the Germans were mowed down by the shrapnel.

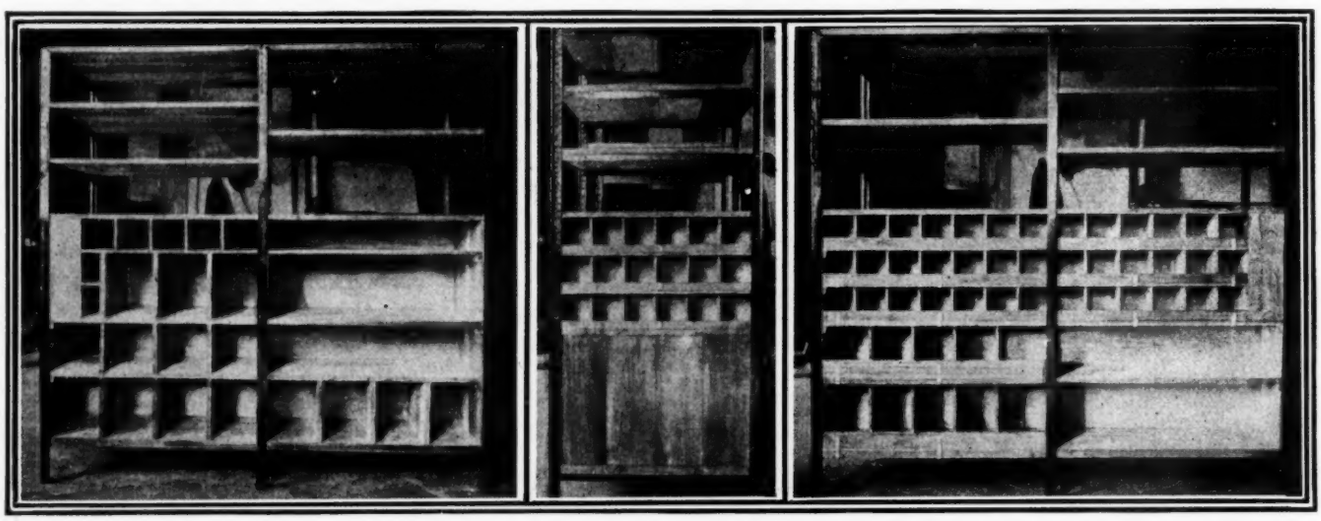
Practical Subjects—Letters and Discussions

A Cabinet for Telephone Supplies.

In a recent issue of The Telephone News, J. H. Luckhart, supervisor of supplies for the Central District Telephone Co., Pittsburgh, describes a material rack, three views of which are shown in the accompanying illustration. The rack is designed for use in storerooms at points where supplies are handled by the plant wire chief or line order foreman.

This rack is six feet high, six feet long and two and one-half feet wide, and has structural steel framework. The compartments are of suitable size for the material which they are to hold. They are so arranged as to group the material by the classes of work for which it is to be used. The shelves are for subscribers' sets and protectors, and the compartments are used for various smaller pieces of apparatus and line order supplies.

With each rack is furnished a drawing showing for what material each compartment is to be used. The advantage of this type of rack is its portability, as it replaces all fixed construction of the older type of shelves now used in various plant warerooms of the Central District company.



Views Showing Construction Arrangement of Material Rack.

Letters to His Old Boss.

Bessemer Hump.

My Dear Pinder:

Effie Dobson left here on the morning train. Have not written recently because I have been so busy looking after Effie's affairs during her two weeks' stay that I didn't do much else. You know she put her money into a mine near here.

When she found there was not even a pick or shovel mark on the side of the mountain where the claim is located, there was trouble. They came very near having to dig a hole six feet long and 100 feet deep to bury the fellow who sold her the stock. I won't say her money is lost, but it is tied up for sometime to come. Someone finally handed over her expense money for the trip out here.

Well, I am in this valuation game up to my neck. A syndicate has been formed to take over the public utilities and operate them in trust for the county for a period of five years when the county proposes taking them over. The county is bonded for all it can stand now. In order to take control of the telephones, waterworks, and lighting systems, a syndicate was authorized, but it must operate under supervision of the county authorities.

I'm not anxious to sell, but under the circumstances I can't do otherwise. To get at the valuation of the plant is the next question.

Our first argument was about my replacement fund. For the past three years I have been setting aside a percentage of our earnings to cover deterioration. I have drawn from this fund only for expenses incurred by actual replacements. Such items as poles, cross arms and wire used for actual replacement of old material, have been covered by this fund. There is a considerable balance on hand, which they claim is a part of the plant, as it stands.

I wouldn't object to this if they would allow me the cost of the plant plus appreciation—that is the increased cost of material at the present time, but that is not their idea. They want to inventory each item, on a basis of its first cost less depreciation for the years in service; also any special items, which show excess deterioration, to be subject to an additional discount. In other words, they base their value upon the future life of the plant with the depreciation fund thrown in for good measure.

To ascertain the exact condition of the plant, they propose a joint inspection in which the representatives of both parties will agree upon the probable life of existing poles, etc.

A good many problems have come up so far. In the first place, the office pole, has only been set five years and must be replaced next year, not because of excess deterioration but for precaution, owing to its importance. Poles of the same class out in the line, would be considered good for five or six years' additional service. There are also several junction and corner poles which must be given attention much earlier than otherwise because of their importance to the system as a whole.

The idea is to make special items wherever possible and to list them with little or no going value. They claim the people should not be called upon to pay for items of no intrinsic value. I claim the public has had the value of these poles from me. They point out that my replacement fund is the people's money paid me for the deterioration of plant, and therefore it should remain with the plant.

Now, the office pole as it stands, represents an investment of $12; they will allow me one dollar. Under present conditions it will cost $16 to replace it.

I will be satisfied to get my original investment out of the plant as it has always paid me a fair dividend, but I think

I ought to have an appreciation as the property has nominally been leased. If they insist upon paying only the value of original cost less depreciation, I can't see where any claim can be made that the replacement fund is a part of the plant.

They argue that while a replacement fund is really necessary, at the same time it should not accumulate but should be used immediately, as the purpose of a large part of it really is to keep up the plant. What is not used is a part of the plant. For illustration, take a $1,000 plant with an estimated life of ten years. At the end of five years, if no replacements have been made, there should be a fund of $500. That would represent the part of the plant actually wasted, or used, in giving service, and to which a purchaser would be entitled.

In my case, the public being the purchaser, I should be paid but $500 and the public would secure the remaining plant and the replacements. So you see by their way of figuring, the sooner I get out, the better I will be off.

They have not as yet employed a competent expert to go into the matter. They are digging around poles, examining cross arms and wire in their own fashion.

Another claim they make, is that owing to the increased cost of materials, my replacement reservation is not sufficient for the purpose. At the same time in their inventory, they intend to use the original cost for a basis. Thus they value a pole which has served one-half of an estimated term at one-half its original cost. If deterioration is shown to be excessive, they make an additional reduction. They make but slight allowance for any part of the plant which shows but little depreciation.

They are considering the matter of "good will and accrued" business, as they call it, but what they may decide is uncertain.

I shall have to appeal to some one, the state commission I presume, to settle the question about the replacement reserve fund. If they pay me the original cost value of the plant, can it be included in the purchase? If they allow the estimated value on a basis of present prices, does it become a part of the plant? If not, then how should the portion which has already been used, be considered?

Some poles which I replaced this year, cost me $3. The original poles cost slightly below half that. Should I get $3 or only a one-half of that—the original cost?

You see I have troubles of my own just now.

Little Dudley.

Bonus System of Paying Toll Operators.

Some time ago we arrived at the conclusion that the average toll operator needs a spur in order that the company may get the best results. In order to arrive at the proper commission basis for a bonus plan, we found out first what the ticket value had been for the past 20 months in our exchange. We handled in that period a total of 160,000 tickets or 8,000 per month. The revenue to the company after deducting clearing house commissions and paying other company commissions, was $24,000, or $1,200 per month. This gave us an average value per ticket of $0.15.

We then decided that these figures could be used as a basis. By finding the ticket value each month, we felt that we could take 8,000 as the basis for the operators' tickets and could afford to give 9 per cent. for any increase of business over 8,000 tickets.

To arrive at the amount due the operator, we multiplied the number of tickets in excess of 8,000 by the ticket value for the month and of this amount, we gave the operators 9 per cent. It so happened that we had in our employ nine operators, including the chief operator and the assistant chief operator. This gave each one 1 per cent.

In order to illustrate how the bonus works, suppose the number of tickets were increased 2,500 per month and that the ticket value had been $0.18 per ticket. The increase in business to the company would amount to $450. Of this amount, 9 per cent. divided among the nine operators would increase their pay $5 per month.

We have been unable to see anything about the plan that will not work advantageously both to the company and the operators. It has been very well received by our operators and has given them something to work for. We have noticed that they are anxious to repeat messages on lines that they formerly had reported uncommercial. The number of cancelled tickets has been reduced 50 per cent. The operators have improved their teamwork and are cooperating with one another. Upon leaving their positions, both on relief and upon completion of their hours, they take greater pains to explain the condition of the tickets they were handling. This makes it much easier for the relieving operator to pick up the work and to give much better service to the subscriber. Tests from the wire chiefs are secured much quicker and the trouble is reported to the wire chiefs more promptly. The operators now assist the wire chiefs in their testing with other offices where before they would report the line busy, thereby holding up the test for long periods, which had it been made at once and the trouble found and cleared, would have helped to pass the tickets much more rapidly.

The plan has made every operator a saleswoman of telephone service. It has removed the "don't care" attitude of the operator who had been in the employ of the company for a long time, who thought she had reached her limit in pay and that all she had to do was to so conduct herself as not to get discharged. It has furnished the incentive for better work and has enabled us to carry many more messages over lines supposed to be inadequate to carry the peak of the load.

We want criticism of our plan. If other companies see good in it, we hope to see them adopt some plan along the same lines that will meet their local conditions, for therein we feel that the greatest good may accrue. Two offices having considerable business between them, would be able to greatly increase the number of messages and the rapidity with which they are passed.

South Bend, Ind. E. E. Daicey, president,
The South Bend Home Telephone Co.

The Modern "Open Sesame."

Shouting at the top of his voice as the massive steel doors were closing upon him, and pounding with all his might as the bolts shot into place, a town official in Jersey City, N. J., found himself locked in a vault in the city hall one Saturday afternoon, with several feet of solid steel and concrete between him and liberty. The other officials and clerks, all unconscious of his predicament, were leaving for the pleasures of Saturday afternoon and Sunday, says The Telephone Review.

None would return to release him until business was resumed Monday morning. Was he overcome by fright; did his hair turn white in a moment, and his mind give way at the prospect of suffocating, or of the lack of food until help should come; did he think of the terror of his family in the excitement of a search for his body in which all of his friends and the newspapers would engage? Not for an instant! He merely went over to the telephone, which had been placed in the vault for just such an emergency. In a few minutes he was outside, recounting the incident to a party of friends who exclaimed: "What a wonderful thing is the telephone!

Wire Mileage in Corea.

According to the latest returns, there are now 11,072 miles of telegraph wires and 29,577 miles of telephone wires in operation in Corea, an increase for the past 12 months, taking in both branches, of 2,352 miles.

Proceedings Before Commissions, Courts and Councils

Discussions and Rulings of State Bodies Having Supervision of Telephone Companies, Decisions of Courts in Matters Affecting Public Relations of Utilities and Actions of City Councils Bearing Upon Franchises, Rates and Service

Cannot Contract Away State Authority.

In a ruling handed down on October 1, the Illinois Public Utilities Commission holds that an individual or company has no authority to contract away the right of the state to forbid discrimination, although the contract was made before the taking effect of the state public utilities commission law. The decision is handed down in the case of the Baker Telephone System's application for approval of certain telephone rates at Armington, McLean and Atlanta.

It is set forth in the application that under an agreement entered into prior to the taking effect of the new law, at the time of the taking over of the McLean exchange, a flat rate for toll service between McLean and Bloomington is extended to three clients and that service is being furnished to some rural subscribers at less than the regular rate. The commission orders that these discriminatory rates be discontinued.

Owners of Instruments Not Entitled to Lower Rates.

The decision of the Illinois Public Utilities Commission in the case of the National Telephone & Electric Co., of Clinton, Ill., in which the commission held that a special rate for subscribers who own their own telephones is illegal, was sustained on September 30 by the circuit court of Sangamon county. The appeal from the ruling of the commission was taken by 80 subscribers who owned their own telephone instruments and argued that they should therefore have a lower rate than those who did not own the instruments used in their houses or places of business.

Chicago Automatic Not Subject to Forfeiture.

William H. Sexton, who has resigned as corporation counsel of Chicago to take up private practice, approved an opinion holding that the clause of the automatic telephone ordinance of 1909 providing that the automatic telephone company shall forfeit all its right, plant and equipment to the city at any time after June 1, 1911, if it "shall not have in operation a telephone system serving 20,000 bona fide subscribers," is without effect. It is declared that the word "serving" may be taken to mean "capable of serving should service be required" and would probably be so construed by the courts.

It is believed that this decision, if well founded, means that the city cannot force a forfeiture, even if it desires to do so, and leaves the city council no alternative but to approve the proposed sale of the property to the Bell interests. The latter protest has been under more or less heated discussion before the council committee on gas, oil and electric light for several months, as a result of the repeated applications of the Illinois Telephone & Telegraph Co. and the Bell telephone interests for a consummation of the $6,300,000 deal. The city council spent $30,000 in investigations to find out if the automatic company had 20,000 bona fide subscribers, and the company also spent a large sum in endeavoring to show that it had.

It was claimed that the company's list of subscribers was padded and that therefore the city could take over the property under the forfeiture clause if it desired to do so. Under the present ruling of the corporation council, however, it makes no difference whether subscribers are bona fide or not, if service can be given to 20,000 instruments. Montague Ferry, municipal commissioner of public service, is prepared to make another check to determine the number of subscribers served by the automatic system.

Wisconsin Supreme Court Upholds Kenosha Telephone Co.

A case of far reaching importance to telephone interests has been decided by the supreme court of Wisconsin, the court holding that a telephone company has the right to make reasonable changes in its method of doing business so long as such changes do not intrench upon contract rights or violate statutory mandates. The case was that of the state of Wisconsin and Michael G. O'Donnell, appellants, vs. The Kenosha Home Telephone Co., respondent.

O'Donnell had a contract with the telephone company to furnish him service at a rate of $2.50 per month, payable in advance. The contract was silent as the place of payment. Previous to October, 1911, the company had sent collectors to O'Donnell, as it had to other subscribers; but about September 1, 1911, it adopted a rule applicable to all subscribers that collectors would no longer be sent, but that bills would be mailed monthly and payment must be made at the office of the company not later than the 15th of the month. O'Donnell was sent several of these notices, but disregarding them and refusing to pay the $2.50 monthly rental, his telephone connection was severed and the instrument removed.

He refused to pay his account at the office of the company, claiming that he had an oral agreement with the company entered into on its behalf by the canvasser who secured his contract, that collections should be made at his office. He called the manager of the company to his (O'Donnell's) office before October 30, but the manager refused to receive the rental.

The lower court held that the rule requiring payment at the company's office did not change the contract between the parties; that it was a reasonable rule; and that plaintiff was in default, and the company rightfully disconnected his service.

In this action O'Donnell sought to collect damages in the amount of $79,900, which he said had accumulated at a rate of $100 a day for 799 days, during which the company had refused him service.

The supreme court held that the oral agreement entered into between O'Donnell and the canvasser as to the place of payment was void "if it varied or added to the terms of the written contract."

"Where a contract for the payment of money is silent as to the place of payment, in the absence of any legitimate inferences to the contrary, the law implies that payment shall be made at the residence, office or place of business of a creditor, if within the state," says Justice Vinje in the opinion of the court. "It is a general rule that, in the absence of a provision in a valid contract to the contrary, the debtor of money must seek the creditor, if the latter be within the state and his residence therein is ascertainable, and there make payment. It follows that the verbal contract relied upon, varied the terms of the written contract and was void, because expressly forbidden by such written contract.

"The right of the company to make reasonable changes in its method of doing business, so long as such changes did

not entrench upon contract rights or violate statutory mandates, cannot be questioned. Reasonable rules for the conduct of business may always be made subject to the limitations above stated. The rule here made was reasonable in its nature, one no doubt productive of less confusion and mistakes, and tending to a more economical administration of the affairs of the company, and not unreasonably burdensome upon the subscribers. There can be no question in this case but that repeated, timely notices of the change were given to O'Donnell. The tender to the manager of the company by O'Donnell was not such tender as to render the company liable, for it was not obliged to receive payment there at the time it was offered. Under the circumstances of this case, it could insist upon a compliance with its reasonable regulation at the place of payment."

Methods of Uniform Appraisal in Maryland.

A long step toward constructive regulation of public utilities and betterment of service is being taken by Osborne I. Yellott, people's counsel to the Maryland Public Service Commission, says the Baltimore Sun. Mr. Yellott is preparing for a uniform appraisal of the value of utilities, which will put the commission in immediate touch with every utility property in the state and lay the foundation for quick rectification of errors in rates, service and financing.

His plan, when completely in operation, will put in the hands of the commission, when any case is taken up, a complete and definite inventory of the property of the company effected, and so prepared that all items of value, upon which agreement has been reached between the commission and the company, will be set forth, and all items upon which there is disagreement, with the differences in estimated value as to each item.

Mr. Yellott is having prepared forms in which will be entered each class of property owned by a utility, with the number of units of each class owned. For example, in the case of telephone companies there will be a space for poles and for the number of them. That principle is carried out in every detail and so worked out in summaries that the complete property owned by a utility will be ascertainable at a glance.

There will be three identical sets of forms. Upon one the utility will set down its property in detail; its estimate in detail of the orginal cost of the several units; its estimate of the reproduction cost; and its estimate of the present value. Upon another form the commission's engineering force will make its estimates, and, in the event that a complainant in a case should employ an engineer, there is another form for his estimates. After the companies' first appraisals are made, additions to property will be added upon the forms. Each of these forms being identical, the people's counsel, in preparing his case, and the commission, in hearing it, can immediately put a finger upon the issues between the opposing sides.

This will enable the commission, when a case affecting property values is up, to go straight to the heart of the matter; when one affecting rates is up, to get before it in short order the property upon which the company asks a return in earnings; when one affecting financing by the company is up, to know whether money is needed for the things which the company may propose to buy. Moreover, it will permit the commission to keep close tab on what the utilities are doing, how they are maintaining their property and what they are spending, and thereby permit it, on its own motion, to hold them to the highest feasible standard of efficiency.

The idea behind Mr. Yellott's plan is that something more concrete and dependable than a catch-as-catch-can investigation of the utilities of the state must be had if the commission and the people's counsel are to give the best regulation for both the public and the corporations.

In the past, investigations into the corporations have been conducted upon varying plans. In each instance, however, the commission and the people's counsel have had nothing in the beginning from which to start, no established facts as to property values. That made the investigations, of necessity, largely conflicts between the people's counsel and the counsel for the corporations as to what property values in given cases were. And because of the divergence of expert testimony as to these values, often the commission was somewhat at sea, as to the truth. Not only that: It has frequently happened that when a case was taken up for hearing, one side had made its estimates of values on one principle and the opposing side upon another, so that the commission was unable properly to make comparisons. Again, the diversity in form of the reports made by the several utilities as to their property has made it exceedingly difficult for the commission to conduct a general affirmative work for improvement in service.

Washington Commission Rules Against Telephone Deposit.

The Washington Public Service Commission has issued an order forbidding telephone companies to exact a deposit from customers at the time of the installation of telephones and fixing October 27 in Seattle as the time and place for a hearing at which companies may protest against the ruling.

A second feature of the order provides that the companies may require the first month's telephone rental in advance, the telephone to remain installed and in use for 10 days following the close of the month before service may be discontinued in case rental is not paid.

The commission is having copies of the order made for distribution among the 160 companies affected, so that they may be familiar with its provisions.

Indiana Companies File Appraisals.

Appraisals of the Indianapolis Telephone Co. and the Central Union Telephone Co. in Indianapolis, have been filed with the Indiana Public Service Commission. The commission will appoint special appraisers to go over the appraisals submitted by the officers of the two companies.

The request of the commission for the appraisals followed a petition of the Central Union Co. to be allowed to put in measured service. The commission replied by notifying the two companies to consider terms on which they could unify the exchanges, and asked for the appraisals. After the commission appraisers have verified and corrected the findings, the two companies will be given an opportunity to file exceptions, and the battle will be on which it is believed in Indianapolis will end in the unification of both services, with popular sentiment seeming to favor the Independent company doing the swallowing.

The appraisal filed by the Indianapolis Telephone Co. fixes the "reproduction cost" of the property at $2,118,225 and the "depreciated value" or physical value of the plant as it stands, at $1,614,924. The latter figures include no such items as the cost of building up the business, franchise value, discount on securities or working capital.

The Central Union Telephone Co. gives its "reproduction cost" as $3,812,833. J. W. Stickney, general manager, says that miscellaneous property aside from the above, is worth $113,659. An item will be filed later to cover the cost of establishing the business.

McMeen & Miller, the engineers making the appraisal for the Indianapolis Telephone Co., give the company an additional valuation of $100,000 for franchise, saying: "Of course we

know that claims for franchise value have no standing before courts or commissions except insofar as the actual cost of obtaining and holding the franchise can be shown, but in this instance we base the franchise valuation on the fact that the city charges $6,000 a year for it. Financially, this is the same as if the company had paid $100,000 for the franchise, and in order to do so had borrowed the money from others at six per cent. If the people of Indianapolis are to permit no value to be attached to this franchise then clearly they have no right to demand this tax upon it."

Report of Indiana Commission.

The first annual report made by the Indiana Public Service Commission, recently issued, shows that the telephone companies of the state are capitalized at $589,233,063, while their revenues are $62,939,508 and expenses $44,132,259.

The report states that an order issued several months ago calling on all public utilities in the state to file inventories with the commission has been rescinded. The commission said it believed the enforcement of such a general order would subject the companies to harassing by engineers and others who might be seeking employment as experts to make the appraisements and prepare the inventories. The commission announced that only such companies as have cases before the commission will be required to file inventories of their plants and properties.

Discretion the Better Part of Valor.

The recent hearing on the petition of the Citizens Telephone Co., of Columbus, Ind., for better rates grew pretty warm when 300 citizens and seven lawyers crowded into the court room where Commissioner Edwards of the Indiana Public Service Commission was holding forth. The company came without a lawyer and was distanced in the first lap. It withdrew the petition, announcing a purpose to refile later. The company stated that it felt legal representation unnecessary, as it was ready to answer any and all questions of whatever form, and to give every aid in the investigation deemed necessary. Better rates were only asked for the rural lines.

Federal Securing Employment for Its Manual Operators.

Burt G. Hubbell, president of the Federal Telephone & Telegraph Co., of Buffalo, N. Y., has announced that all of the company's operators who have been displaced by the new automatic telephone system will be retained on full pay for two weeks, or for such part of two weeks as may be required to find permanent positions for them.

To facilitate the work of finding positions for the 200 or more operators, the Federal company has organized an employment bureau within the company. The bureau will be in charge of Mrs. N. D. Baines of the Federal company, who has had executive supervision over all the Federal operators for years.

"The company feels, and the public should feel, a sense of obligation to these young women," said Mr. Hubbell. "They have served faithfully and been no small part of the city's business and social structures. Though the automatic system simply precludes all need for operators, yet we are just as much interested as ever in the welfare of our operators, who have always been loyal to the company and to the public, and always zealous in their work. We are going to very great ends to provide them with positions as good or better than the positions they are leaving. Mrs. Baines is unusually fitted to conduct this employment bureau we have created. She has had supervision of our operators for many years. Practically all the operators came into the company under her supervision; she knows them, knows their capabilities and is keenly alive to their interests. She will be aided in her work of finding places for them by several other department heads in the Federal company who are very well qualified.

Two weeks is doubtless sufficient time to locate them all permanently. They are peculiarly fitted for the exacting work in the modern business office. They are well trained and efficient and are the equal of any body of employes in Buffalo for deportment, character and health.

Many of them have already been permanently located. Many of those who have been in service with us for more than three or four years have been retained by us in clerical and other departments of the organization. Any business man will find among our operators the ideal applicant for either private branch exchange or office work."

Referendum on Bell Franchise in Spokane.

It has been definitely decided by the city council of Spokane, Wash., that the granting of a 25-year franchise to the Pacific Telephone & Telegraph Co. shall be submitted to the people at the election on November 3.

Earnings of New England Telephone Company.

The report of the New England Telephone & Telegraph Co. for the year ended June 30, 1914, amounted to $17,798,327, as compared with $16,139,517 in 1913, of which $12,285,655 was contributed by subscribers stations, $1,123,756 by pay stations, $4,080,788 by toll service and the remainder by attachments and rentals and miscellaneous items. The operating expenses were $13,417,978, not including taxes, as compared with $11,090,526 in 1913. The general balance sheet of the company shows total assets of $73,898,370 as compared with $71,953,842 in 1913.

A statement showing the company's operations as a whole, including operations in Massachusetts and outside the state, follows:

	1914.	1913.
No. subscribers	349,211	319,507
No. stations	445,277	407,646
No. operators	6,006	5,077
No. pay stations	13,985	11,706
Underground wire (miles)	758,096	672,678
Overhead copper wire (miles)	335,561	299,711

The total number of stockholders on June 30, 1914, was 4,577. Of this number 3,956 are residents of Massachusetts, holding a total of 162,970 shares.

Report of Receiver of Inter-State of New Jersey.

James Kerney, receiver of the Inter-State Telephone Co. of Trenton, N. J., has filed in the court of chancery a preliminary report, showing that he has made a personal examination of the property of the company, which operates the Independent telephone service in Trenton, Atlantic City, Bridgeton, Millville, Vineland, Ocean City, Bordertown, Mount Holly, Moorestown, Salem, Port Norris and the adjacent rural territory. The company also owns jointly with the Keystone Telephone Co. of Philadelphia, the long distance lines between Camden and Atlantic City, and through the Eastern Traffic Association, operates over all Independent telephone lines in Pennsylvania, New York and other eastern states.

Receiver Kerney's report shows that first and second mortgage bonds of the Inter-State company, aggregating $2,849,150, are outstanding, and there is past due in interest on these bonds, $297,923.77. Outside of the overdue bond interest, the company has no current debts. The interest on the second mortgage bonds has never been paid.

Altogether about $6,000,000 in cash has at various times been put into the properties controlled by the Inter-State company, but through reorganizations and a previous receivership, the bonded obligation has been reduced to the present figure of $2,849,150. The company has never made

provision for any reserve fund nor set aside any moneys for replacement or depreciation of property as required by the New Jersey Public Utilities Commissioners.

The most valuable property in the system is that operating in Atlantic City. That property is operated by the Atlantic Coast Telephone Co., a separate corporate existence being maintained to comply with the franchise provisions. The entire issue of $100,000 of capital stock of the Atlantic Coast company, however, is owned by the Inter-State company, and Mr. Kerney has been made treasurer of the company and his counsel a director, in order that a control of the corporation's organization may be in the receiver's hands. Besides having purchased the entire capital stock of the Atlantic company, the Inter-State company has advanced to that corporation about $300,000, for building and extending the plant and system in Atlantic City. All of the other subsidiary companies, six in number, are operated as a part of the Inter-State system, and the report of the receiver shows them to be in good operating condition.

In addition to the companies it operates, the Inter-State company also owns the entire bond issue and a control of the capital stock of the Paterson, Passaic & Suburban Telephone Co., for which a receiver was named on August 29, at the instance of Mr. Kerney. The Paterson company was a large creditor of the Inter-State company and was being operated at a loss. Likewise the Inter-State company owns the Elizabeth Telephone Co., which is not being operated. Three telephones are kept in use in Elizabeth to keep the franchise alive; and the report shows that the Inter-State has an investment of $113,000 in the Elizabeth property. About 10 miles of underground conduit were laid in Elizabeth, through which no wires have ever been run.

All of the property of the Inter-State company, including its ownership of the stocks and bonds of subsidiary companies, has been mortgaged to secure the issues of first and second mortgage bonds. The system has about 10,000 telephones in service, and Receiver Kerney shows that he is having an expert appraisal made of the entire property. The report sets forth that the exchanges at Salem and Moorestown are each costing about $100 a month more in actual operating cost than the receipts of the offices, while at Vineland an even worse situation is presented. The franchise in Vineland fixes the rate for service at $12 a year for each telephone, and according to the receiver's report, it is estimated that it costs $18 a year to maintain each telephone. There are 900 telephones in use in Vineland.

Chicago Department of Public Service Social Meeting.

The city telephone bureau of Chicago entertained the other members of the department of public service on September 30, Commissioner Montague Ferry being the guest of honor. Ray O'Brien again demonstrated his ability as toastmaster. Talks on the practical value of the various bureaus comprising this department were made as follows:

"The Telephone Bureau," City Telephone Supervisor G. W. Cummings.

"The Transportation Bureau," Supervisor R. H. Kelker, Jr.

"The Electric Bureau," Supervisor C. E. Schutt.

"The Gas Bureau," B. M. Ferguson

"The Engineering Bureau," E. N. Fales.

By these meetings, which are held frequently, the personnel of the department is kept in close touch, through the talks, with all of the work performed by each bureau.

A spirit of good fellowship sprang into life at this meeting which knitted the whole department, of over 100 men, into a co-operating team such as is seldom found in a municipal force of employes. The work of the department is conducted along the same lines of efficiency as though it were of a private corporation.

The regard in which Commissioner Ferry is held by his subordinates was shown by the enthusiastic response to a proposal that resolutions of confidence, esteem and admiration be drafted, engrossed and presented to him. At this meeting it was disclosed that he had stopped a campaign of contributions for the purpose of purchasing a jeweled badge of office, which his men had intended to present him. In a circular letter to the men in the department, he diplomatically directed their attention to the main purpose of the department of public service—that of safeguarding the interests of the public in their dealings with public utility corporations of Chicago.

Pole Removal Ordinance at Albany, N. Y.

At a recent meeting of the common council of Albany, N. Y., an ordinance introduced by Alderman Elmer D. Gunn, revoking the franchise of the Home Telephone Co. and directing the officers to remove all poles, wires and other accessories from the streets, was passed. The Home Telephone Co. was purchased over a year ago by the New York Telephone Co.

Summary of State Commission Hearings and Rulings.

CALIFORNIA.

September 29: Decision authorizing the Union Home Telephone & Telegraph Co., of Los Angeles, Cal., to issue $22,700 of promissory notes to be used in refunding other notes outstanding.

October 1: Order granting the Lindsay Home Telephone & Telegraph Co., of Lindsay, Cal., an extension of time to March 31, 1915, in which to issue a note or notes in the sum of $2,000.

October 3: Order authorizing the Consolidated Securities Co. to sell its telephone system in the city of San Farnando, Los Angeles County, to the San Fernando Telephone & Telegraph Co. In return, the telephone company is authorized to issue a promissory note in the sum of $20,000, bearing interest at 6 per cent. per annum,—the principal payable in installments over a period of 20 years. The telephone company is also authorized to issue $10,000 par vale of its capital stock to be sold for not less than par and to be used for additions and betterments to its system. The authorization of the transfer of property will not become effective until the afore-mentioned $10,000 of stock has been sold.

ILLINOIS.

September: City Telephone Exchange at Barry, Ill., authorized to put into effect a revised schedule of rates to eliminate certain discriminatory charges.

September 17: Approval of sale by the Des Plaines Telephone Co., of Des Plaines, Ill., of 100 stations in Edison Park to the Chicago Telephone Co. A previous item in this department gave the erroneous impression that the Des Plaines company itself had been sold, which is not true. The Des Plaines Telephone Co. owns and operates 1,100 stations out of its two exchanges in Park Ridge and Des Plaines, both of which exchanges lie just outside the city limits of Chicago. Of the approximately 700 stations operated from Park Ridge, 100 are located in Edison Park, a small suburb which was taken into Chicago four years ago. On account of the inconvenience to the Des Plaines company in serving these stations inside the city limits, and in extending service to new subscribers (the list having increased from 25 to 100 since the suburb was admitted to Chicago) the Illinois commission was petitioned and granted permission to the Des Plaines company to sell its 100 stations in Edison Park to the Chicago Telephone Co. The Des Plaines Telephone Co. has plans perfected to spend $20,000 on new buildings and in changing its Park Ridge exchange from magneto to common battery. Work on these improvements will begin early next spring.

October 1: Decision ordering discontinuance of discriminatory rates by the Baker Telephone System to three clients between McLean and Bloomington, and holding that a contract for such rates made before the passage of the present law is null.

October 1: Alhambra Mutual Telephone Co., Alhambra, Ill., given permission to change rates.

October 1: Viola Mutual Telephone Association, Viola, Ill., given permission to change rates.

October 1: Findlay Mutual Telephone Co., Findlay, Ill., given permission to change rates.

October 1: El Paso Telephone Co., El Paso, Ill., given permission to change rates.

October 6: Hearing on application of Elkhart Independent Telephone Co., Elkhart, Ill., for permission to change rates.

October 6: Hearing on application of Vermont Telephone & Exchange Co., for authority to change telephone rates at Vermont, Ill.

October 6: Hearing on application of Illinois Telephone Co., of Jacksonville, Ill., to establish telephone rates.

October 7: Hearing on application of Kinsman Independent Telephone Co., of Kinsman, Ill., for authority to change rates.

October 7: Hearing on application of Port Byron Telephone Co., Port Byron, Ill., for authority to change rates.

INDIANA.

September 30: Attica Telephone Co., of Attica, Ind., and Shawnee Telephone Co., of Stone Bluff, Ind., ordered to restore an old flat rate of 50 cents a month for toll service between Attica and Stone Bluff. It was alleged that in January, 1913, the two telephone companies fixed a new rate of 10 cents per call without authority from the commission. The decision of the commission was made without going into the reasonableness or unreasonableness of the charge established by the companies.

October: Application by the telephone companies operating at North Vernon and Vernon, Ind., for an increase in rates.

NEW YORK.

October 5: Hearing held at Utica by Commissioner Decker on complaints of the Olbiston Co., of Utica; Philip E. Lewis, of Utica; Albert P. Seaton, of New Hartford; Geo. A. Dagwell, of New Hartford; Geo. T. Anderson, of Whitesboro; Arthur A. Cole, of Whitestown; Eva E. Griffiths, of Yorkville; and Dwight H. Murray, of Syracuse, against the New York Telephone Co., as to rates and other matters.

October 6: Hearing held at Albany on complaint of residents of the village of Dexter, N. Y., against the Jefferson County Telephone Co. and the New York Telephone Co. in regard to toll charges between Dexter and Watertown. This hearing was upon the petition of the New York Telephone Co. for a rehearing.

PENNSYLVANIA.

October 21: Hearing to be held at Harrisburg on application by the Central District Telephone Co., of Pittsburgh, Pa., for a certificate of public convenience, evidencing the commission's approval of an agreement with the borough of Aspinwall, near Pittsburgh, for the joint use of poles.

SOUTH DAKOTA.

September 24: Decision in the matter of the investigation into the rates filed by the South Spring Lake Telephone Co., Eureka Telephone Co., Java Farm Telephone Co., and Spring Lake Telephone Co., and also as to other charges and practices of these companies. Hearing in this investigation was held at Glenham on May 5, 1914. The decision requires these companies, which, the testimony showed, do not operate any exchanges, but are connected with exchanges of the Dakota Central Telephone Co., to cease from transacting business on the assessment basis and from requiring subscribers to purchase stock in their companies as a condition precedent to receiving telephone service. It also requires the companies to rent telephone instruments to all subscribers, including their stockholders, at a reasonable monthly rate, and also to supply service to such persons in their immediate community as require telephone service. Subscribers are required to pay the company a message fee of 15 cents for each conversation over their telephones by persons not subscribers of the company and to collect this sum from each outsider permitted to use their telephones. The decision is accompanied by a communication from P. W. Dougherty, assistant attorney general of South Dakota, answering a number of questions which were asked by George W. Ryan, secretary of the South Spring Lake Telephone Co., at the hearing of the case.

October 9: Hearing at Woonsocket, Sanborn County, in the case of the city council and city of Woonsocket against the Schuler Electric & Telephone Co. and A. G. Schuler. The complaint related to service given by the company in Woonsocket and surrounding territory. Rural subscribers complained of inability to secure proper telephone connections in the city of Woonsocket; Woonsocket subscribers complained that rates were excessive and higher than charged for the same service in other cities of the same size and that difficulty was experienced in securing telephone connection at night for emergency service.

October 10: Hearing at Iroquois in the matter of the investigation of a schedule or tariff of rates filed in the office of the commissioners on September 4, 1914, by the Dakota Central Telephone Co., to apply at its exchange in Iroquois, effective November 1, 1914. The proposed rates are $2.25 per month for main line business service, $1.75 for main line residence service and $1.25 per month for party line residence service, the previous rates being $1.50 per month for business and $1 per month for residence service. Protest having been made against the advanced schedule and the commission of its own initiative being of the opinion that the propriety of the rates should be investigated, the company was ordered to produce and file an itemized inventory of the material used in its telephone plant at Iroquois, together with a plat showing the location of the poles and equipment, and a statement of the receipts and expenditures of the exchange, from the date of the consolidation of the telephone plants at Iroquois to October 1, 1914. It was further required to supply all information in its possession concerning the value of its plant at Iroquois, the service which it performs and the rates to be charged therefore.

October 12: Hearing to be held at Wall, Pennington County, in the matter of the investigation of the rates and practices of the Cheyenne Valley Electric Co., of Wall, S. D. This telephone company made application as to the proper charge to make for forwarding telegrams and the commissioners have information to the effect that the company is making added charges for delivering toll messages to its subscribers. The company is required to produce its books and records.

October 16: Hearing to be held at Vivian, Lyman County, in the matter of the investigation into the action of the Farmers Union Telephone Co., of Presho, in disconnecting its lines from the local exchange of the Nebraska Telephone Co., at Presho, and also with reference to the practices and rates of the company and its failure to file the reports required by the commissioners.

October 16: Hearing to be held at Vivian, Lyman County, in the matter of the investigation as to practices and rates and the filing of reports of the Vivian-Ft. Pierre Telephone Co., of Vivian, S. D.

October 28: Hearing to be held at Milbank, Grant County, in the case of the city of Milbank, and the Milbank Commercial Club against the Dakota Central Telephone Co., and the Grant County Telephone Co. The petition requests that the defendant companies, both of which operate telephone exchanges in Milbank, the former connecting with its toll lines and the latter with rural lines, be required to establish physical connection so that the toll service of the Dakota Central may be secured from the telephone instruments of the Grant County company. It is desired to do away with the present inconvenience and the 10 cent messenger fee charged when subscribers of the Grant County company have to be notified to visit the toll officers of the Dakota Central to receive toll messages for them. It is declared that the volume of toll business in and out of Milbank is sufficient to demand that physical connection be established.

VIRGINIA.

September 30: Order requiring physical connection and a working agreement between the Lexington Mutual Telephone Co., of Lexington, Va., and the Natural Bridge Telephone Co.

WASHINGTON.

October 27: On this date telephone companies will be given an opportunity to appear before the commission at Seattle and protest against a ruling forbidding them to exact a deposit from customers at the time of installation of telephones.

WISCONSIN.

September: Order requiring the Hubertus Telephone Co., of Hubertus, Wis., to employ a competent lineman to repair its lines and to maintain them in a manner to give service in conformity with the standards for telephone service prescribed by the commission.

September: Order authorizing the Berlin Telephone Co., of Berlin, Wis., to issue $1,250 of stock to be sold at par, the proceeds to be used in making extensions and additions to the company's plant.

October: Order authorizing the Norwalk Independent Telephone Co., of Norwalk, Wis., to discontinue its rate of 75 cents per month for telephone service and to substitute a rate of $1.25 per month, allowing a discount of 25 cents on bills paid on or before the last day of the current month.

October: Order granting an adjustment of the rates of the West Menasha Telephone Co., of Menasha, Wis. The order provides for the establishment of a rate of $15 per telephone per year for both stock and non-stock companies. It provides that the company may require contracts for a year in advance if such a procedure is deemed necessary, and that it may charge a fee of $1 for making an inside move and a fee of $2 for making an outside move.

Sparks from the Troubleman's Department

The Autobiography of a Call, as Related to Jay W. Hache.

One day, not long ago, I was sitting at my desk wearily thinking of where so many calls go that never reach their destination. Suddenly a little sprite seemed to slip up from among the wires, landing upon my desk with a bound. After darting back and forth for a few seconds, it drew itself up with as much dignity as a fun-loving, happy little sprite could.

Saluting me in quaint way, she began: "You, in your thoughts, came wandering up almost to our Beautiful Valley of Completed Calls. Before we get there, we must cross through the great Land of Lost Calls. To some, the way across is short; to others, it is long and difficult. Those for which you are grieving never get through, and are forever lost. I got through, but the way was not short.

"Seeing that you are about to ask me about my experiences, I will relate them to you, if you will not interrupt me."

Being assured that I would respect all her requests, and seeing me arrange myself comfortably in the desk chair, she, smiling, seemed for a second about to fade away to the great unknown; then, her countenance changing, she began her story:

I originated in this big, wide, bustling city, where the two systems have so many branch exchanges. The names of the branch exchanges are used as prefixes to the subscribers' numbers, while a letter is used to designate which party on a line is wanted. Some of my troubles were due to the brightness of the minds of some traffic managers who used prefixes that sounded like one of the digits, such as "Vine," which sounds so much like "nine." Subscribers, who do not give the prefix to a number beginning with nine, often go to Vine exchange.

"I had gotten through the 'Land of Lost Calls.'"

We calls are given the name of the person's telephone which we are to reach, so that my name was Main 4231-*R*—quite a long name for such a little personage as I. Of course, you know that some are longer, for calls sometimes last as long as an hour.

I originated in the office of a subscriber located in a branch exchange district. You see, by my name, that I was to go to a party on a line in the Main exchange.

My master, as I am accustomed to call the manager of the office, was a nice man. He was of a somewhat nervous, excitable disposition. You don't care whether he was short or tall, good looking or homely; these qualities do not help or hinder the service. His manner was somewhat brusque, which, coupled with a quick temper, made the operators uneasy, all of which helped to interfere with my reaching my destination.

It seems that this particular business man's wife had gone to some sea-side summer resort for her vacation, so Mr. Jones (as we will call him), wanted to share his grief with one of his friends.

Having finished dictating his morning's correspondence, he pulled the telephone extension toward him. In response to the operator's "Number?" he gave me to her, "Main 4231-*R*," and I was started on my life's journey. It has been varied and perilous, but, in truth, it has not been monotonous or uneventful.

The local operator took me and pleasantly passed me over the order wire to the "B" operator of the Main exchange. This operator, after making a busy test, put the plug of my trunk in the multiple. The supervisory lamp on the local not going out, the local operator told Mr. Jones that she would "ring 'em agin." About a half-minute later she said that "they don't answer," and disconnected my master when he hung up. I had made a good start, but was back at my starting place. A few minutes later Mr. Jones thought that he would try it again.

"Hello! Is this Main 4231-*R?*"

"No. You've got the wrong number!" And bang went the receiver. My master began to get a little nervous and flashed the hook rapidly. The operator, when she opened the key, was not able at first to make herself heard.

"Say, Operator! I want you to get me Main 4231-*R.*"

"Why, didn't you get them?"

"If I had, do you think I would be asking you for the same number?"

"What number, please?"

"Main 4231-*R.*"

Then I was started off again, but my trip was not to end, for I returned with the "busy back," and that did not make Mr. Jones feel any better.

Waiting until he thought they were through talking, my master started me on my journey once more. "Operator, will you please get me Main 4231-*R?*"

The operator gave me out over the order wire, but, in her haste, she did not notice that her finger was on the wrong order-wire button. You can imagine my master's feelings when a lady, in reply to his query: "Is this Main 4231-*R?*" said: "No, this is Erie 4231-*R.*"

I surely had been getting some experience, but someone else would have heard some expressions had they been near when the subscriber told Mr. Jones that it was not his number.

He was so mad that when he got the operator back on the line, he snapped out, forgetting the prefix:

"I want 4231-*R.*"

"Shore 231-*R?*" repeated the operator.

"Yes, 4231-*R.*"

Now, since he was so mad, I thought that I had a good chance to get to my destination, but—

"Hello," answered a gruff voice.

"Is this 4231-*R?*"

"Yes, this is Shore 231-*R.*"

"Let me talk to John, please!"

"John who?"

"Why, John Day."

"There ain't no John Day here!"

"Isn't this Main 4231-*R?*"

"No! This is Shore 231-*R.* Good-bye."

Had you been there with a camera you could have taken a blue print without special-prepared paper.

Mr. Jones, after flashing, got the operator to answer him.

Now, being so excited, he gave the number out transposed as Main 4321-*R*. The operator in putting up the connection, saw that 4321-*R* was monitored, so she put it on the chief operator's desk, who cut in with "In just a minute." In the meantime Mr. Jones' temper was not cooling off very fast. When a good long full minute, possibly a little more, was up, she came back with "Calling Main 4321-*R*? It—"

"No! I want Main 4231-*R*. I did not call Main 4321-*R*."

"The operator understood you to say—"

"Operator Halifax! She heard me say every number you have in the directory but Main 4321-*R*."

"Just hold the line a minute and I will see if I can get them for you."

She put the call through and the party answered.

"Here is your party. Go ahead!"

She then connected the trunk into the multiple. My career seemed to be drawing to a close, but listen to the conversation:

"Hello! Is this Main 4231-*R*?"

"Yes, Main 4231-*R*."

"Is Mr. Day there?"

"Yes. He—s-r-r-s, bang!"

Mr. Jones was disconnected.

"Will you call him?" Getting no response, he worked the hook up and down a couple of times. The operator who had been watching the connection, broke in with:

"Your party has hung up."

"No, he hasn't! Get him back!"

She put the call through again and was given the "busy back."

Mr. Jones then told the supervisor his troubles. She called through to the Main exchange supervisor, who, after getting the busy test, listened in on the line and found that the parties were talking, which she reported back to Mr. Jones. He angrily hung up.

My autobiography was almost completed. I had caught a glimpse of the "Beautiful Valley of Completed Calls," but could not get in.

Mr. Jones turned to his desk hoping, since he was having so much trouble, that possibly his friend might call up, when the bell rang. Taking the receiver down, he said: "Hello!"

"Is this Charley?" came over the line. The voice was so charming and attractive that Mr. Jones, whose name was Charley, yielded to temptation and replied: "Yes, this is Charley."

So the conversation was kept up for a few minutes that prevented my starting. While at the telephone, he tried again. The operator put him in on a busy trunk. Flashing the operator back, he asked for Main 4231-*R*, and this time he was greeted by "Hello, dearie!"

"I ain't your dearie!"

"Now, don't get mad. I guess I know your voice!"

"Is this Main 4231-*R*?"

"Oh! Quit your kidding. You know that isn't my number."

Guess that girl felt a little bit shocked by the expletive she heard and the way the hook was vibrated up and down.

"Central, please give me Main 4231-*R*."

After a few seconds waiting, he asked the party who answered it, if it was Main 4231-*R*.

"No! It's K," was the surly reply.

"Central, give me the trouble clerk."

The trouble clerk tested the line, then tried to raise *R*, but was unsuccessful, always getting *K*.

"There must be some trouble with that line. We will take care of it for you as soon as possible," was the comfort Mr. Jones received.

So he waited for about an hour. This time he was more successful in getting his number, but Mr. Day was not in and would not be back for half an hour.

Some men seem to be born to meet discouragements, but they still have a persistency which enables them to cling to the old proverb, "While there is life, there is hope."

While busy at work the bell rang once more. His face was wreathed in smiles when, in reply to his "Hello," he heard, "This is John, did you call for me?"

"Yes, I want you to—" Buzz, Buzz. Some operator not taking a busy test, rang in on a busy line. By the time it was straightened out Mr. Jones had been disconnected.

Endeavoring to get Mr. Day back, he received the reply that the lines to Main were busy.

The next time Mr. Jones left off the prefix again. The operator, thinking that he wanted a number in the local exchange, plugged him into the multiple of 4231, not knowing that the *R* was taken out. So she reported: "They don't answer." My master was about worn out. He called the chief operator again. She endeavored to get his number for him, but her efforts were futile. The chief operator, breaking rules and regulations, told Mr. Jones that she would call him back to the telephone.

Before long his bell rang, but again he was to be disappointed, for it was some one calling Manx 679. The operator had taken a wrong assignment. Again the bell rang: "Never mind, thank you. I rang you by mistake."

Once more Mr. Jones tried to get his number. This time he was successful. For once something did not happen to interfere with the conversation. He was able to invite John to a stag party of four with all the necessary accessories for a good time. The next day he wrote his wife that he went to bed early at a quarter of 12—(3 a. m.)

I had gotten through the great "Land of Lost Calls" into the "Beautiful Valley of Completed Calls." My career was somewhat varied, and the message was not of much importance, but similar to many of the calls of which people most loudly complain.

The subscribers do not understand the many things that cause calls to be lost. How so many people, through their own carelessness, do not get their parties or through others' intentional deceptions lose their calls.

While I am a stranger to you all, the advice I can give you is simple; when you have done that do not worry over others' faults. My advice is: Keep your equipment in good condition and then let the traffic department worry about the lost calls.

Good bye! she lingeringly said, as she smilingly vanished into the wires on my desk.

Canned Music and Party Lines.

Music boxes are making all kinds of trouble on the telephone party lines. One man received a telegram calling him to Chicago hurriedly. Ho took down his receiver to inquire about the next train south and this is what he got: "When the Midnight Choo Choo Leaves for Alabam."

A woman user of a joint line wanted to give her milkman a special order for the next day. She drew "Down by the River, You and I." Another woman wanted to ask her husband if he would be home to supper at the usual hour and the music box replied for him, "You'll Never Know."

Judging from complaints that have been heard the telephone concerts on party and single lines have developed into a nuisance. The owner of a music-making machine gets a new record, likes it very much and then calls his or her friends to the telephone to let them hear it at the other end of the line. Then a friend comes back with something like this: "Say, won't you put on the sextet from 'Lucia di Lammermoor, or 'Silver Threads Among the Gold?'" and right away something is started that puts the line out of service for the joint user indefinitely.

What the "Live Wire" Pledge-Signers Did for Beeville

The Story of Two Dead Towns and How One of Them Came to Life—The Hypodermic of Ginger and How It Was Administered—The "Live Wire" Pledge and the Things Accomplished by Its Signers

By Frank Farrington

At equal distances, in opposite directions from a good-sized city on the Central Railroad, there are two towns which ten years ago were each of about 3,000 population.

These two towns were doing business under practically identical conditions. Neither had much in the way of local manufacturing enterprises. Both depended largely on the farming trade of the same class of prosperous farmers. The stores in Ayville resembled the stores in Beeville as the peas in a pod resemble one another. The merchants in one town were the twins of the merchants in the other. The intervening city gave them both the same competition.

If you had been offered your choice of the two towns as a gift, you would not have turned over your hand in favor of either and you would have declined them both. If you were a traveling man, you would have dubbed them both dead ones. A Washington Irving picture of the typical sleepy town would have fitted either community like the peel on an apple. There was a very good volume of business transacted in each town, but the people who transacted it did it in their sleep.

But that was ten years ago. And now look at these two towns! The ten-year-old description still fits Ayville perfectly. The grass still grows between the flagstones in the sidewalk and the state road passes by six miles away. The hotel flag-pole has rotted off at the base, and there are five more broken panes in the store fronts along Main street, otherwise Ayville needs no change of identification tag.

But Beeville! Well, what has happened there, anyway? I ran out there from the nearby city the other day, and when I got off in front of the new brick station and climbed into the waiting motor bus that serves as a transfer to each of the hotels, my first impulse was to go back and look at the name on the depot and see if I had made a mistake.

As we rolled up Main street, over a good macadam road, I asked the traveling man next to me what had started the Beeville bee buzzing.

"I don't know where they got the bug," he answered, "but this is sure some live little burg. I've only been coming here a few months, but it's got any town of its size backed right off the map. Why, their hotel here is a better place to spend Sunday than down in the city."

The whole thing looked like one of life's little mysteries, and I determined to investigate.

I dropped into the nearest drug store after dinner and bought a cigar out of a patent humidor case and lighted it with a neat little electric lighter, and received along with my change a cash register check, on which I read, "Beeville, a good town to live in." On the other side of the check I read, "Beeville, a good place to do business." I suspected the truth of both statements by this time.

"What has made Beeville such a good place to live in and do business?" I asked the druggist.

"Oh, we kind o' got a hypodermic injection of ginger here a few years ago," said the pharmacist, as he wiped his glasses. "This town used to be a business cemetery."

"I know that, and that's why I am so astonished now. You have as modern a drug store as I've seen in the state."

"They do tell me this is a pretty good looking little joint," he acknowledged, modestly. "Well, you'll find all the stores in town are right up to the minute. Why, there's Johnny Corcoran's grocery right next door. He's got seven computing scales, patent bins for all his stock, floor show cases, Kawneer store front, multiple draw cash register, cheese cutter; I don't know what all he has got, and he hasn't got much on the rest of us at that. Go down and see the Burns Dry Goods Store if you want to see something that's just a little bit of all right. It isn't as big as the city stores, but it's got it all over most of them for convenience. You couldn't get a farmer around here to go down to the city to trade if you offered him fare both ways and dinner besides."

The druggist was called away then and I did not get the secret of the ginger hypodermic injection from him, so I went out and paused in front of Johnny Corcoran's all-glass front. Well, I might have thought I was looking at the window of the best fancy grocery in New York or Chicago as far as cleanliness and class of window display went. It was a sanitary grocery all right and no mistake. I went in.

"Is Mr. Corcoran busy?" I inquired of a clerk whose apron was as spotless as the linen in the dining room back at the hotel.

I supposed he would take me for a traveling man and put me off, but whatever he thought me he did not put me off, and neither did Mr. Corcoran. But Johnny Corcoran was the busiest man I have seen in a long while, and the best I could do was to slip in a word edgewise now and then, and I didn't even get a chance to ask him who put the Bee in Beeville.

But when I get curious about a thing I can't stop until my curiosity is satisfied. I meandered along looking into the candy store, which looked lighter and brighter inside than it was out on the street in the sunshine (almost); past a shoe store that had two window displays that looked as if they had climbed right out of the pages of a trade-journal; past a lunch room that made me hungry, though it was just after dinner.

Everywhere I saw all the conveniences and fixtures, the advertisements of which in the trade journals were every-day diet with me. The town was certainly up to the minute in methods and equipment. It was up to the minute in stock, too. I saw in a hardware window display goods with the manufacturer's cut-outs and show cards just as I had seen them first announced in a trade paper two weeks before. I went in and asked the man how he came to know about that display and the goods, and so on. Sure enough, he had seen the same advertisement I saw and had wired (mind you, wired!) for it at once. "Why," said he, "you've got to use the quickest method if you get anything in this town ahead of your competitors. Every man Jack is Johnny-on-the-spot."

"Beeville didn't use to be like this," I said. "What happened?"

"Bit by the Ginger-Bug," said he, as a farmer drove up in front and beckoned him to come out.

Ginger hypodermics! Ginger-bug! I couldn't wait for the hardware man to roll out the barbed wire the farmer wanted. I must hurry to some other store and find out about this ginger thing.

Right next door was Burns' Dry Goods Store. Four beautiful windows in front, with two entrances. A special sale of rugs from samples was going on inside, and the rest of the store was busy, too. I wanted to see what Mr.

Burns would say about ginger, but there seemed little likelihood of my getting to him. Across the street was the only place I could see that did not appear to be busy. It was a little one-story building with an office in it, a "Real Estate" sign in the window. A man sat in the doorway quietly smoking. Perhaps he could tell me who had made the Beevillains into live wires.

"How's business?" I asked him.

"Bullish," said he, "but I can't get anything to sell."

"Everybody holding onto property for a raise?"

"No; everybody holding onto it because they need it in their business. The town isn't growing so much, but everybody is making money. It used to be that every one wanted to sell and no one wanted to buy. Now, every few days, somebody comes along and wants to buy or rent to get into business here, but there's nothing to be had but vacant lots out of the business section."

"Well," said I, "I've got you here where you can't get away. Now, I want to know what has hit this town. It used to be as dead as a motor with the 'gas' all gone."

"Do you see that sign down the street there, 'Excelsior Press'?"

"Yes."

"That's where you'll find the man who invented the 'Live Wire Pledge.'"

"Is this 'Live Wire Pledge' anything like the Ginger-Bug? I've already been told the town was bit by the Ginger-Bug and that it has had a hypodermic of ginger."

"It does sound a little mixed," said the real estate man, as he snipped the end from a cigar and offered me its mate. "But it is simple enough after all. Why, this young Salisbury came to town and bought the Excelsior Press and the newspaper it published. Everybody thought he must be crazy to pay real money for that business in such a dead town. I'm not yet sure he wasn't and isn't a monomaniac. He began to call on the merchants and ask them what was the matter with them. Finally he told them so often there was something the matter they began to really believe it.

"He preached at them in his paper and wherever he saw them, and finally he got them all together—every mother's son of them—and I'll be darned if he isn't the king of spellbinders! He told them they were a hundred years behind the times and they believed it. He told them their stores were filled with junk and they had to admit it. He told them their methods were those of their grandfathers, and they knew he told them the truth. He swore they would all turn into mummies if they didn't get rid of the hookworm and the sleeping sickness and a few other trifling complaints, and they began to get pale around the gills.

"Then, when he had them eating out of his hand, he told them only one thing would save them. Every man in that room, he said, must sign a Live Wire Pledge before he would be allowed to go home. Then he unrolled a sheet of paper as big as a barn door and hung it on the wall, and it read: 'I hereby agree to spend ten dollars within the next six months for trade journals about my business. Failing to do this, I acknowledge that I am dead to the world and might as well quit.' Did they sign it? Not a man in the room flinched! And that's all."

"Do you mean to say," I asked, "that the signing of that pledge by the local business men has made Beeville what it now is?"

"Perhaps not signing the pledge, but living up to it. At least there we were, a community where you couldn't see the people for the cobwebs, and now, here we are so full of life a third-rail would melt if it touched us."

"That must have been quite a while ago. Do these business men keep on buying business literature?"

"They formed an organization and incorporated it, and the first rule in the book of by-laws is that every member has to spend ten dollars a year for trade papers. And they do it, too! By George, you don't have to walk down the street but once to see the results in every business, from blacksmith to banker."

The Value of System

By WALT MASON

Your system may be right as rain. You may be stranger to all pain; but, if you don't take proper care, disease will soon be rankling there, and you'll be blowing dollar bills for some fat doctor's basswood pills.

You go outdoors and wet your feet, or drink ice water in the heat, or sit some evening in a draught—and then the doctor springs his graft, and all the neighbors hear you groan with measles in your collarbone. If you'd be healthy, husky, strong, you must watch out, the whole year long. The little cold that makes you sneeze may bring along some dread disease.

And thus it is in business, Friend: On some wise plan you must depend; some modern system you must know, if you would see your business grow; if you would stop the little leaks, which tap the till, like human sneaks. Your faith on system must be placed if you would end all useless waste, and straighten, ere a wreck is made, the tangles of your daily trade. Your business health is much the same as health in any mortal frame. The little ills, so easy caught, are all with dire disaster fraught; the ills to which no thought you gave, may take you to an early grave.

So every dealer who would win, all earnestly should now begin to read the journal of his trade, which for his benefit is made; which digs up helpful facts and prints a score, a hundred, useful hints, that tell how other dealers won, and corded up all kinds of mon. The painter and the druggist man are sure to find some winning plan. The landlord of the big hotel, who knows he's doing pretty well, will learn how better he might do, when he has read his paper through. The telephone man therein will read what sort of goods his patrons need, and every man who would advance, will find described some bully chance.

That man's a hundred years behind who doesn't try to stock his mind with helpful, vital truths that live—such as the good trade papers give.

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From Factory and Salesroom

Convention: Western Pennsylvania Independent Telephone Association, Butler, Pa., October 15, 16; Ohio Independent Telephone Association, Columbus, Ohio, October 29, 30

Automatic's Quick Work Repairing Fire Damage at Buffalo.

The following telegram, under date of October 7, sums up in brief form the achievement of the Automatic Electric Co. in furnishing and installing the materials necessary to repair the loss by fire sustained by the Federal Telephone & Telegraph Co. at Buffalo, N. Y.:

Automatic Electric Co.:

I beg to notify you that our main exchange was cut into automatic service this morning and wish to take this opportunity of expressing to you the appreciation of this company for the attention your company has given us since our fire, which occurred on September 25. On that day our enitre terminal room was burned out, affecting something like 16,000 pairs of wires, and it was necesasry to replace the entire central office cabling.

This work was entirely finished on Monday, the fifth, exactly ten days from date of fire. Your factory did a wonderful piece of work in forming these cables and shipping them to us in so short a time, the first cables being received on Sunday, two days after the fire. Great credit is also due to the workmen in our terminal room who labored so unceasingly and enthusiastically in the work of re-establishing our service.

The men in your employ were leaders in this work, and it is to these men, as well as the men of our companies who came to our assistance, that we owe our deepest obligations. The re-establishment of service in so big an exchange sets a mark for ten days from clearing the room for reconstruction to date of completion, which I believe has never before been accomplished.

(Signed) B. G. Hubbell, president.
Buffalo, N. Y. Federal Telephone & Telegraph Co.

An idea of the magnitude of this work can be obtained from the details which follow:

The manual plant of the Federal Telephone & Telegraph Co., serving about 25,000 subscribers, was operated from one office. At six o'clock, Friday morning, September 25, a fire started from a high tension current, coming in over its lines, which resulted in a short time, in completely destroying the main distributing frame, burning the complaint desk beyond repair, and so injuring the toll, recording, information and wire chiefs' desks that they had to be rebuilt. In addition to this, all cables connected to the main frame were water soaked and had to be cut back to the basement and replaced.

The Automatic Electric Co. was advised of the fire at 8:30 o'clock Friday morning, September 25—nine days prior to the date fixed for the cut-over from manual to automatic operation, viz., October 3—and shipment of replacement materials began by noon of the same day. As TELEPHONY goes to press this week, the job has been completed, and all of the straight line telephones in the Buffalo main automatic exchange are in service. In other words, the debris made by the fire has been cleared away, new equipment manufactured and installed, and final adjustments given to the new apparatus, all within 10 days after the fire. It is worthy of note in this connection that none of this work is of a temporary or make-shift character, but was all done in the regular order as though no emergency had existed.

When the fire occurred, the three new automatic branch exchanges were practically ready for service, but had not been cut in, being held for the completion of the automatic installation at the main exchange, at which place the fire occurred. These branches are located in the outlying sections of the city and serve the majority of the residence stations. It was therefore possible to cut them in at once. Within 30 hours after the fire, service had been restored to approximately one-half of the subscribers.

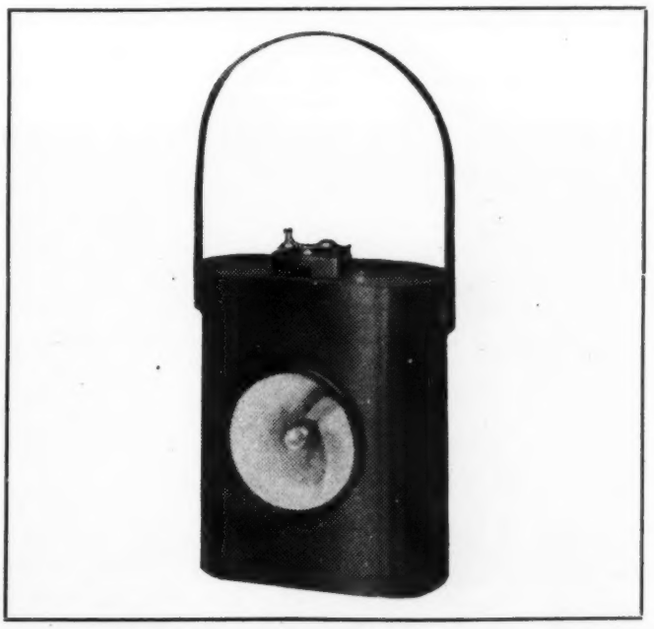
An idea of the magnitude of the task resulting from the fire can be obtained from the following facts: A total of approximately 135,000 feet of jumper wire, 35,000 feet of cable of various sizes, 15,000 protectors and 550 relays was required to repair the damage, while the installation work involved the placing in position of this material, the unsoldering of 20,000 connections and the soldering of 80,000 connections.

The fire necessitated the removal and replacement of every cable connected to the main frame. These consisted of all the main line cables connecting the subscribers' lines with the automatic switchboard; all cables leading to the trouble, information, complaint, toll and wire chiefs' desks; all cables from the automatic switchboard forming trunks leading to the different exchanges; and all trunks leading to the various branch exchanges for business service. The damage done to the information, toll recording and wire chiefs' desks was very great and required that these be practically re-equipped. The complaint desk had to be rebuilt. The main frame was also rendered useless. While the ironwork was salvaged, the frame had to be entirely reconstructed.

Not only were these materials manufactured and installed, but the change from manual to automatic service was only delayed 3½ days beyond the scheduled time.

A Standard Battery Electric Lantern.

The H. W. Johns-Manville Co. announces that it is placing on the market a new type of portable electric lantern of exceptionally wide utility, and one which, it is believed,



Electric Lantern with Standard Battery.

will find a ready market among lantern users because it entirely overcomes the usual inconvenience in securing batteries of proper size. This lantern, called the J-M Mobilite electric lantern, uses standard size dry cells, which are easily obtainable everywhere The use of larger batteries has naturally given this lantern very much greater burning capacity; in fact, the makers claim that with two ordinarily good dry cells, used intermittently, it will burn for nearly 150 hours.

The J-M Mobilite electric lantern is fitted with a tungs-

ten bulb of especially low amperage and a specially designed parabolic reflector—two accessories that have contributed largely to the present day efficiency of electric lighting on motor cars. Working in conjunction, this bulb and reflector produce a light of remarkable brilliance and power, by which objects are said to be clearly discernible at a distance of 150 feet. So powerful is the light that repairs have been made at night on pole lines with one of these lanterns held on the ground pointing upward into the network of high tension wires, affording the lineman ample light to work by.

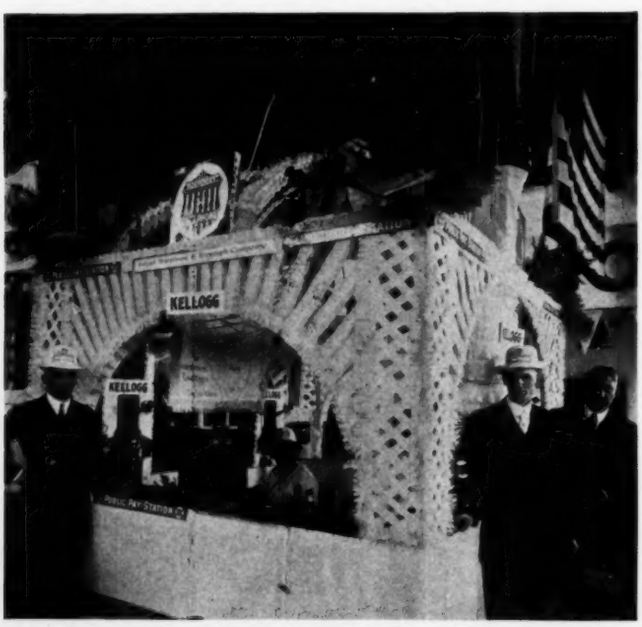
The absolute safety of the J-M Mobilite electric lantern has opened up a field practically closed to oil and gas-burning lanterns. Employes in powder mills, mines, sewers, etc., have felt a great sense of security in having a lantern without power to ignite or inflame combustible gases and materials. The J-M Mobilite electric lantern has been characterized by those who have adopted it as "the lantern of a thousand uses" and its merits are readily recognized by telephone and electric companies.

Operating Company Interests Fair Visitors.

A view of the combined exhibit of the United Telephone & Telegraph Co. and the Kellogg Switchboard & Supply Co. at the Lancaster County Fair is shown in the accompanying illustration. The fair was held at Lancaster, Pa., in which place the United Telephone & Telegraph Co. has an exchange.

The exhibit was conceded to be the finest on the ground. It led directly to the procuring of several contracts for the operating company and the sale of telephones and switchboards for the manufacturer.

The exhibit was installed under the direction of A. Paul Rohrman, local manager of the United company, and was designed by J. C. Henderson, solicitor of the company. "There were over 100,000 visitors to the fair," said C. M. Thompson, of the Kellogg company, "and we gave out 10,000 pieces of advertising matter."



Operator and Manufacturer Combine in Country Fair Exhibit.

Telephones were installed in the various buildings and departments, the grand stand, judges' stand, hospital, etc. The telephone company gave free service to all subscribers in the county.

Stromberg-Carlson at Toronto Fair.

In accordance with its usual custom, the Stromberg-Carlson Telephone Mfg. Co. displayed a very complete line of its products in a tastefully arranged booth at the Canadian National Exhibition, recently held in Toronto, Canada. This exhibition attracts nearly a million people each year, not only from the province of Ontario, but from several of the northern states, as well, and is therefore an exceptional opportunity to educate the public to the use of "Quality Apparatus."

Stromberg-Carlson at Canadian National Exhibition.

The booth contained samples of telephone apparatus of every description, from the little two-way telephones for house-to-barn service, to the heavy iron-clad sets for mining service. The "Call-A-Phone," a new apparatus designed to augment the value of the private branch exchange, was also shown, in operating condition, together with one of the company's lamp signal private exchange switchboards of the latest type.

N. W. Baldwin and E. M. Wolcott, of the Stromberg-Carlson company's Toronto office, were in charge.

A Tribute to Philip Nungesser.

Friends of The Nungesser Carbon & Battery Co., in Cleveland, Ohio, are receiving an interesting anniversary circular in which the officers and directors of that company tender to Philip Nungesser their congratulations on the occasion of his twenty-fifth anniversary in the dry battery business. Under the title "Philip Nungesser, scholar, scientist, inventor," the following tribute is paid to Mr. Nungesser's achievements:

"For a quarter of a century, Philip Nungesser has been making and improving dry batteries. His experiments and researches have covered every phase of dry battery development. He has brought to bear upon the problem the learning of the scholar and the wisdom of the scientist. Years ago he set himself the task of perfecting the dry cell. This end he may be said to have achieved in the production of the 1900 and Acme Rapid Fire batteries.

It was on September 7, 1889, that Mr. Nungesser sold the first dozen of his cells. He got 75 cents a piece for them, and they were the first commercially successful dry batteries ever sold in this country.

At that time his output amounted to a few sets of cells a month. Now there are about 40,000,000 dry cells made in this country each year.

Mr. Nungesser's early experience was similar to that of almost all inventors. People refused to believe that his batteries could ever be used for anything practical. Other people thought he was crazy. He insisted, however, that there was a

wide use for dry batteries, and at length he succeeded in having them tried in connection with telephone service. How general their use has become in connection with the telephone is a matter of common knowledge.

When the gas engine was perfected the dry battery was again called into service for the purpose of furnishing rapid ignition, thus broadening greatly its scope of usefulness. In many other ways it is adding to the comfort, the convenience, the pleasure and the profit of mankind.

The laboratory is Mr. Nungesser's playground as well as his workshop. It is there that he is always to be found. He is never satisfied with what has been done. He is constantly trying to find some way in which it can be done better. It is only natural that his investigations and experiments should have led to valuable and important discoveries. Such discoveries have enabled him to choose materials and effect combinations of elements which give Nungesser batteries their high efficiency.

Through his efforts in bringing the dry batteries to perfection, Mr. Nungesser discovered certain important principles bearing upon the production of carbon, with the result that the carbon industry is today an important branch of the Nungesser Carbon & Battery Company's business.

At this time, when Mr. Nungesser is completing his twenty-fifth year of service in the perfection and production of the dry cell battery. He is to be congratulated on the result of his efforts. He is the recognized leader in the dry battery field, occupying a position which is similar to that of Edison and Steinmetz in their special branches of electrical science and development.

He has made the dry battery one of the most potent agents in the promotion of industry and the advancement of civilization. There are few men to whom those who use dry batteries owe more than they owe to Philip Nungesser."

At the last meeting of the directors of the Nungesser Carbon & Battery Co., the officers and directors of the company presented Mr. Nungesser with a very handsome silver loving cup on which was inscribed a portion of the foregoing statement. This was a complete surprise to Mr. Nungesser, and such a token of esteem from his business associates was highly appreciated.

October Issue of Automatic Telephone.

The October issue of Automatic Telephone, published by the Automatic Electric Co., Chicago, contains the usual interesting front page of automatic news stories from world-wide sources. A special feature of the issue is an illustrated article on the automatic system ordered for Simla, India. The two strong series of articles on operating and engineering subjects are continued, while the editorial is devoted to a comparison between the uniform service of the automatic system and the average kind.

The Telephone in New Zealand.

The report of the New Zealand Telephone and Telegraph Department for the year ended March, 1914, says the total value of the telegraph and telephone business, including miscellaneous receipts and government telegrams, was £579,816 (compared with £528,120 in the previous year).

The length of telegraph and telephone line and wire on March 31 was 15,558 (14,485) miles of pole line, and 123,796 (88,897) miles of wire.

Twenty-five new telephone exchanges were opened during the year, subscribers increased by 5,233 and the number of connections by 6,481. The number of exchanges is now 238, and the total number of connections is 49,415. There are 2,514 miles of telephone exchange lines and 79,154 miles of wire. The percentage of exchange connections and bureaus to the population on March 31, 1914, was 4.36, and for Wellington 8.14, Dunedin 6.34, Auckland 6.15 and Christchurch 5.72. A fire (caused by a tramway trolley pole striking a pair of aerial telephone leads which fouled the high-power trolley wires) occurred in the distributing frame at the telephone exchange at Wellington on Jan. 7, 1914, about 1,500 connections being affected.

The Strowger automatic system is in operation at Auckland with a capacity of 1,300 lines and at Wellington with a capacity of 1,000. About 600 lines at Auckland and 400 at Wellington are in use, with satisfactory results. Trouble is occasionally experienced due to excess of dampness following an injury to the overhead lead cable resulting in lowered insulation; but this trouble, of course, equally affects any other central battery system. It is the intention to replace these cables more generally by lead covered cables laid underground. The Strowger equipment at the two exchanges was introduced to provide additional switch board accommodation for new subscribers, pending the fulfilment of the contract let last year for an automatic installation.

Preliminary steps to the erection of lines under the Country Telephone Lines Act, 1912, are being taken by a few local bodies. The small activity in this direction may probably be explained by the department's generous party line system, which has popularized the telephone in outlying districts previously precluded by high rates from participating in the benefits of the telephone.

Central Union Consolidates Departments.

The Central Union Telephone Co. has issued orders that hereafter its plant department will be under jurisdiction of the commercial department. It is said that the plan of dual departments has been found not to work well.

Statement of Telephony's Ownership.

Statement of the ownership, management, etc., of TELEPHONY, published weekly, at Chicago, for October 1, 1914, required by the Act of August 24, 1912.

Note—This statement is to be made in duplicate, both copies to be delivered by the publisher to the postmaster, who will send a copy to the Third Assistant Postmaster General (Division of Classification), Washington, D. C., and retain the other in the files of the post office.

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H. D. Fargo, 4932 Kenmore Avenue, Chicago.
J. C. Kelsey, 1131 Lunt Ave., Chicago.
I. B. Lipson, 4947 Vincennes Avenue, Chicago.
E. M. McMeal, 4147 Drexel Boulevard, Chicago.

Known bondholders, mortgagees, and other security holders, holding 1 per cent. or more of the total amount of bonds, mortgages and other securities:

F. S. Kenfield, Augusta, Mich.
E. J. Baker, 410 Diversey Parkway, Chicago.

(Signed) H. B. MCMEAL, Editor.

Sworn to and subscribed before me this 29th day of September, 1914. Walter Brown,

[SEAL] Notary Public.

(My commission expires March 1, 1918.)

Legal Cases and Decisions

By A. H. McMillan

Guarding Ropes and Stringing Wires.

The Iowa Telephone Co. was stringing large lead cables or conduits to the cross arms of telephone poles in Des Moines, Iowa. At one place it was at work stringing these cables within a block of a public school and kindergarten, attended by large numbers of small children. The cable was being slowly unwound from a large spool, unguarded in the street, and to the end of the cable a large rope was attached which ran up to a pulley fastened upon one of the cross-arms of the telephone pole, thence through a series of like pulleys to other cross arms and finally to the base of a telephone pole farther away. At the base of the last pole was a large pulley called a "snatch block," through which the rope attached to the cable ran and a team was attached to the end of the rope after it passed through the snatch block.

When the horses attached to the rope were driven forward along the street, the rope was made taut, and passing through the different pulleys, drew the cable up to the cross-arms for fastening. No guard of any kind was used to keep the children or others away from this appliance and no person was stationed at or near it. While the work was going on, some children caught hold of the rope as it passed through the pulley for the purpose of "helping the horses pull." The rope suddenly jerked and the fingers of a boy seven years old were injured in the pulley. Some time before this accident other children had been seen attempting to play with the rope and had been warned away by the emloyes of the telephone company.

The court affirmed a verdict for the boy against the telephone company, on the ground that the company was negligent in not guarding the rope and pulley or warning the children away. The fact that the boy was a trespasser in taking hold of the rope was held not to prevent his recovery, because the company's employes knew that the rope and pulleys was attractive to him. Both the school boy and the company's employes had an equal right to the use of the streets, and neither was a trespasser as to the other. Ashbach vs. Iowa Telephone Co., 146 Northwestern, 441.

Repealing Franchise Rates.

The Southern Bell Telephone & Telegraph Co. filed a bill of complaint to restrain the enforcement of an ordinance by the city of Birmingham, to have it declared null and void and a cloud on the plaintiff's title to its franchise to collect tolls from its subscribers. The ordinance assailed repealed a previous ordinance which purported to make effective an agreement between the company and the city to fix rates for services to be charged by the company to the inhabitants of the city in the future for a period of five years. By its terms the company was to have the right to raise its rates for duplex residence service fifty cents a month to each subscriber beginning January 1, 1914. The repealing ordinance merely recited the making of the agreement; the passage of the ordinance; that the contract was beyond the power of the city commission; that it had been broken by the company's failure to give the service stipulated to its subscribers; and declared the contract and ordinance rescinded and annulled.

The company's contention was that the repealing ordinance impaired the obligation of the original contract and was hence obnoxious to both state and federal constitutions. The court refused to grant the relief sought by the company on account of the well settled rule of law that an ordinance of a city, the effect of which is merely to declare the repudiation of a contract and which does not prescribe any antagonistic rights or duties, is not legislation impairing its obligation, though the contract so repudiated is valid and binding. This rule was held applicable to the case because the repealing ordinance did not substitute other rates or restrict the right of the company to fix rates, or prescribe any steps to be taken by the city thereunder.

The court also refused to grant an injunction restraining individual subscribers to the telephone company from refusing to pay rates fixed by a contract between the company and the city. Southern Bell Telephone & Telegraph Co. vs. City of Birmingham, 211 Federal, 709.

Telephone Line on Railroad Right of Way.

Where the fee of a country road as well as that of the right of way of a railroad company remains in the land-owner, the construction of the telephone line on either is an appropriation of his property which cannot be justified except in case of condemnation by a public service telegraph or telephone company. So holds the Texas Court of Appeals in a suit brought to restrain a company from erecting its line. In the same case it was held that neither the county, which has an easement in the road, nor a railroad company which has an easement in the right of way, could authorize the use for the private telephone line over such ways, as easements granted for public purposes cannot be used for private purposes. Hence the court held that the injunction should be granted, because there was no condemnation proceedings nor any authorization of the telephone line. Acme Cement Plaster Co. vs. American Cement Plaster Co., 167 Southwestern, 183.

Unlimited Contract.

A contract for telephone service provided certain contingencies on which it could be terminated at the subscriber's option, and certain rates would be paid for one year, without any provision for an extension, but showed an intention that the service should be continued until another contract was substituted. It also provides that the subscriber could terminate the contract at any time after the first year by 30 days' notice, but did not provide how it could be terminated by the company. It was held that this contract after the first year became one without limit, which either party could terminate, the subscriber by thirty days' notice and the company by reasonable notice. Commonwealth vs. Central District Telephone Co., 90 Atlantic, 338.

Condensed News Reports

Officers of Companies Are Urgently Requested to Forward to Us Promptly All Financial and Other Statements as Soon as Issued and Any Items of Interest as to Their Plants and Systems

Personal.

OLAF JOHNSON, manager of the Whitewater, Wis., exchange of the Wisconsin Telephone Co., was married recently to Miss Marion Hall, of the same city.

H. E. WARD, who has been at the Scranton office of the Bell Telephone Co. of Pennsylvania, for the past several years, has been transferred to Carbondale, to succeed Thomas A. Garvey, as manager.

HARRY O. TURVEY, special inspector for the telephone bureau of the department of public service of the city of Chicago, has been placed in charge of extensive investigations relating to all telephone service used by the City of Chicago. Mr. Turvey was born at Bridgeport, Ohio, December 29, 1883, and was educated in the grammar schools of that city, and also at Hyde Park high school, in Chicago. He has been connected with the telephone field and its allied industry, the telegraph field, for about 12 years. For about two years, Mr. Turvey's experience has endowed him with local knowledge of great value in the studies assigned to him.

New Companies.

CANAAN, IND.—The Canaan Mutual Telephone Co. has been incorporated with a capital stock of $2,270 to operate a telephone line in Jefferson county. The officers are: L. Van Buren, president; E. Gans, vice-president; and C. E. Harper, secretary and treasurer.

WATSON, KANS.—The Watson Telephone Co., has been chartered. The capital stock of the new company is $3,000. Its purpose is the erection and maintenance of a rural telephone line. The stockholders are: G. M. Taylor, C. R. Milli-